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THE

GEOLOGICAL RECORD

FOR

1875.

AN ACCOUNT OF WORKS
ON
GEOLOGY, MINERALOGY, AND PALÆONTOLOGY
PUBLISHED DURING THE YEAR.

EDITED BY
WILLIAM WHITAKER, B.A., F.G.S.,
OF THE GEOLOGICAL SURVEY OF ENGLAND.

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ALERE FLAMMAM.

PREFACE.

In issuing the second volume of the GEOLOGICAL RECORD it will be well to notice the points in which it differs from the first. These are:—the use of a more distinct type for special purposes (thicker type for names of authors, and italics for journals), so as to make reference more easy; the introduction of the heading "Oceania" for various islands that do not group well under other headings; and the addition of an "Index of New Species," which cannot fail to augment the value of the palæontological part of the work.

The increase in the number of papers, &c. noticed, as compared with the volume for 1874, and the addition of a Supplement for that year (making in all 2350 entries against 2130), have made this volume much larger. It is to be hoped that the greater expense thus caused will be met by an equivalent increase in the number of Subscribers, especially as the subscription has been kept at the original low sum; and I would beg all geologists to aid us in firmly establishing this useful work.

The grant from the British Association has not only removed some anxiety as to finances, but has also enabled me to secure the services of Mr. T. W. Newton, Assistant-Librarian of the Royal School of Mines, who has greatly relieved me in the revision of proofs, and in other ways lightened my share of the work.

A fire at the printers' has caused some delay in publication. Having "passed through the fire" almost unhurt, let us hope that our success is assured—and that the GEOLOGICAL RECORD may continue to carry out the motto of its publishers, "ALERE FLAMMAM," in a less literal way.

WILLIAM WHITAKER.

London, July 1877.

CONTENTS.

Page

PREFACE iii

INITIALS OF CONTRIBUTORS vii

LIST OF CONTRACTIONS ix

ERRATA xix

STRATIGRAPHICAL AND DESCRIPTIVE GEOLOGY.

1. British Isles. W. TOPLEY, F.G.S., Assoc. Inst. C.E., Sub-Editor 1
2. Europe. G. A. LEBOUR, F.G.S., Sub-Editor 47
3. Arctic Regions. G. A. LEBOUR, F.G.S., Sub-Editor 109
4. America. G. A. LEBOUR, F.G.S., Sub-Editor 113
5. Asia. F. DREW, F.G.S., Sub-Editor 134
6. Africa. E. B. TAWNEY, F.G.S., Sub-Editor 144
7. Australasia. R. ETHERIDGE, Jun., F.G.S., Sub-Editor 147
8. Oceania (and various Islands). R. ETHERIDGE, Jun., F.G.S., Sub-Editor 165

PHYSICAL GEOLOGY. F. DREW, F.G.S., Sub-Editor.

1. Volcanic and Subterranean Phenomena; Metamorphism 170
2. Denudation; Glacial Phenomena 180
3. Rock-formation 190
4. Miscellaneous 194

APPLIED AND ECONOMIC GEOLOGY. W. TOPLEY, F.G.S., Assoc. Inst. C.E., Sub-Editor 197

Page

PETROLOGY. Rev. T. G. BONNEY, M.A., F.G.S., Sub-Editor 206

Meteorites 226

MINERALOGY. F. W. RUDLER, F.G.S., Sub-Editor 229

Mineral Waters 267

PALÆONTOLOGY.

1. Vertebrata. Prof. L. C. MIALL, F.G.S., Sub-Editor 271

2. Invertebrata. Prof. H. A. NICHOLSON, D.Sc., F.G.S., Sub-Editor 297

3. Plants. W. CARRUTHERS, F.R.S., F.G.S., Sub-Editor .. 334

4. Index of New Species, by W. H. DALTON, Prof. NICHOLSON, and W. CARRUTHERS 342

MAPS AND SECTIONS 358

MISCELLANEOUS AND GENERAL. E. B. TAWNEY, F.G.S., Sub-Editor 372

ADDENDA. W. H. DALTON, F.G.S., Sub-Editor 383

SUPPLEMENT TO THE GEOLOGICAL RECORD FOR 1874. W. H. DALTON, F.G.S., Sub-Editor 400

POSTSCRIPT 416

INDEX. By H. B. WOODWARD, F.G.S. 417

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Mitth. k.-k. geogr. Ges.—Mittheilungen der kaiserlich-königlichen geographischen Gesellschaft. Vienna.

Mitth. nat. Ges. Bern.—Mittheilungen der naturforschenden Gesellschaft in Bern.

Monatsb. k. preuss. Ak. Wiss.—Monatsberichte der königlich preussischen Akademie der Wissenschaften zu Berlin.

Monthly Notices R. Soc. Tasm.—Monthly Notices of Papers and Proceedings of the Royal Society of Tasmania. Hobart Town.

Nachricht kön. Ges. Wiss. G.-A. Univ. Göttingen.—Nachrichten von der königlichen Gesellschaft der Wissenschaften und der Georg-August Universität, Göttingen.

Naturaleza.—La Naturaleza. Periodico cientifico de la Sociedad Mexicana de Historia Natural. 4to. Mexico.

Naturalist.—The Naturalist: Journal of the West-Riding Naturalists' Society, and General Field-Club Record. Huddersfield.

Nature.—Nature, a weekly illustrated Journal of Science. 4to. London.

N. Jahrb.—Neues Jahrbuch für Mineralogie, Geologie und Paläontologie. Stuttgart.

. *Ver. Erdk. Darmstadt.*—Notizblatt des Vereins für Erdkunde und wandte Wissenschaften zu Darmstadt und des mittelrheinischen geo- ischen Vereins. Darmstadt.

cta Ac. Cæs. Leop. Nat. Car.—Nova Acta Academiæ Cæsareæ Leopol- o-Carolinæ Germanicæ Naturæ Curiosorum. Dresden.

Field-Club Papers.—North Staffordshire Field Club. Annual Ad- ses, Papers, etc. Hanley.

. Nat.—Nyt Magazin for Naturvidenskaberne. Christiana.

et.-Akad. Förh.—Öfversigt af Kongl. Vetenskaps-Akademiens För- llingar. Stockholm. ✓

raphica.—Palæontographica. Beiträge zur Naturgeschichte der elt. 4to. Cassel.

.—Paléontologie Française, ou description des fossiles de la France, uée par une réunion de paléontologistes sous la direction d'un é spécial. 4to. Paris.

-Palæontographical Society [Monographs of]. 4to. London.

tbourne Nat. Hist. Soc.—Papers of the Eastbourne Natural-History y (reprinted from a local newspaper). 4to.

—London, Edinburgh, and Dublin Philosophical Magazine and l of Science. London.

s.—Philosophical Transactions of the Royal Society of Lon- 4to.

—Annalen der Physik und Chemie. Herausgegeben zu Berlin C. Poggendorff. Leipzig.

r.—Popular Science Review. London.

. Ac.—Proceedings of the American Academy of Arts and s. Boston.

Assoc.—Proceedings of the American Association for the Ad- ent of Science. Salem.

Phil. Soc.—Proceedings of the American Philosophical Society, Philadelphia, for promoting Useful Knowledge. Philadelphia.

Field Club.—Proceedings of the Bath Natural-History and ian Field Club.

Field Club.—Annual Report and Proceedings of the Belfast ts' Field Club.

Nat. Hist. Phil. Soc.—Proceedings of the Belfast Natural- nd Philosophical Society.

. Nat. Club.—Proceedings of the Berwickshire Naturalists' lnwick.

Soc. Nat. Hist.—Proceedings of the Boston Society of Natural [United States.]

Nat. Soc.—Proceedings of the Bristol Naturalists' Society. nd Bristol.

c. Sci.—Proceedings of the California Academy of Sciences. isco.

ld Field Club.—Proceedings of the Cotteswold Naturalists' b. Gloucester.

soc.—Proceedings of the Geologists' Association. London.

Proc. Inst. Civ. Eng.—Minutes of Proceedings of the Institution of Civil Engineers. London.

Proc. Lit. Phil. Soc. Liverpool.—Proceedings of the Literary and Philosophical Society of Liverpool.

Proc. Lit. Phil. Soc. Manch.—Proceedings of the Literary and Philosophical Society of Manchester.

Proc. Liverpool Geol. Soc.—Abstract of the Proceedings of the Liverpool Geological Society.

Proc. Lyc. Nat. Hist. New York.—Proceedings of the Lyceum of Natural History of the City of New York.

Proc. Nat. Hist. Soc. Glasg.—Proceedings of the Natural History Society of Glasgow.

Proc. Phil. Soc. Glasg.—Proceedings of the Philosophical Society of Glasgow.

Proc. R. Geogr. Soc.—Proceedings of the Royal Geographical Society. London.

Proc. R. Irish Acad.—Proceedings of the Royal Irish Academy, Dublin.

Proc. R. Phys. Soc. Edin.—Proceedings of the Royal Physical Society of Edinburgh.

Proc. R. Soc.—Proceedings of the Royal Society of London.

Proc. R. Soc. Edin.—Proceedings of the Royal Society of Edinburgh.

Proc. Somerset Archæol. Nat. Hist. Soc.—Proceedings of the Somerset Archæological and Natural-History Society. Taunton and London.

Proc. S. Wales Inst. Eng.—Proceedings of the South Wales Institute of Engineers.

Proc.-verb. Soc. Mal. Belg.—Procès-verbaux de la Société Malacologique de Belgique. Brussels.

Proc. Warwick. Field Club.—Proceedings of the Warwickshire Naturalists' and Archæologists' Field Club. Warwick.

Proc. W. Lond. Sci. Assoc.—Proceedings of the West London Scientific Association and Field Club.

Quart. Journ. Geol. Soc.—The Quarterly Journal of the Geological Society of London.

Quart. Journ. Micr. Sci.—The Quarterly Journal of Microscopical Science. London.

Quart. Journ. Sci.—Quarterly Journal of Science. London.

Queenslander.—The Queenslander. Fol. Brisbane.

Rec. Geol. Surv. Ind.—Records of the Geological Survey of India. Calcutta.

Rend. Ac. Sci. Ist. Bologna.—Rendiconti delle Sessioni dell'Accademia delle Scienze dell' Istituto di Bologna.

Rend. R. Ist. Lomb.—Rendiconti del Reale Istituto Lombardo di Scienze e Lettere. Milan.

Rep. Brit. Assoc.—Report of the British Association for the Advancement of Science. London.

Rep. Geol. Surv. W. of 100th Meridian.—Report upon Geographical and Geological Explorations and Surveys West of the One-hundredth Meridian. 4to. Washington.

Rep. Miners' Assoc. Cornwall.—Report and Proceedings of the Miners' Association of Cornwall and Devonshire. Falmouth.

Rep. Rugby School Nat. Hist. Soc.—Report of the Rugby-School Natural-History Society.

Rep. U.S. Geol. Surv. Territories.—Report of the United-States Geological Survey of the Territories. 4to. Washington.

Rep. Winchester Coll. Nat. Hist. Soc.—Report of the Winchester College Natural-History Society.

Rev. Géol.—Revue de Géologie (by Delesse and De Lapparent). Paris.

Rev. Mar. Col.—Revue Maritime et Coloniale. Paris.

Rev. Min.—Revista Minera. Madrid.

Rev. Sci.—Revue Scientifique de la France et de l'Étranger. 4to. Paris.

Rev. Univ. Mines.—Revue Universelle des Mines, de la Métallurgie, des Travaux Publics, des Sciences et des Arts appliqués à l'Industrie. Paris.

Schrift. phys.-oekon. Ges. Königsberg.—Schriften der physikalisch-oekonomischen Gesellschaft zu Königsberg.

Sci. Goss.—Hardwicke's Science Gossip. London.

Sitz. Ges. Beförd. gesammt. Nat. Marburg.—Sitzungsberichte der Gesellschaft zur Beförderung der gesammten Naturwissenschaften zu Marburg.

Sitz. Isis Dresden.—Sitzungsberichte der naturwissenschaftlichen Gesellschaft Isis in Dresden.

Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.—Sitzungsberichte der kaiserlichen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Classe. Vienna.

Sitz. k. böhm. Ges. Wiss.—Sitzungsberichte der königlichen böhmischen Gesellschaft der Wissenschaften. Prague.

Sitz. math.-phys. Cl. k.-bay. Ak. Wiss.—Sitzungsberichte der mathematisch-physikalischen Classe der königlich-bayerischen Akademie der Wissenschaften zu München. Munich.

Sitz. Nat.-Ges. Dorpat.—Sitzungsberichte der Naturforscher-Gesellschaft zu Dorpat.

Sitz. nat. Ges. Leipzig.—Sitzungsberichte der naturforschenden Gesellschaft zu Leipzig.

Sitz. phys.-med. Soc. Erlangen.—Sitzungsberichte der physikalisch-medicinischen Societät zu Erlangen.

Skand. Nat. Forh.—Skandinavisk Naturforskerinödet Forhandlinger. Copenhagen.

Sver. Geol. undersökn.—Sveriges Geologiska Undersökning. [Swedish Geological Survey.] Stockholm.

Trans. Ac. Sci. St. Louis.—The Transactions of the Academy of Science of St. Louis [Missouri].

Trans. Amer. Inst. Min. Eng.—Transactions of the American Institute of Mining Engineers.

Trans. Bot. Soc. Edin.—Transactions of the Botanical Society of Edinburgh.

Trans. Camb. Phil. Soc.—Transactions of the Cambridge Philosophical Society. 4to.

Trans. Clifton Coll. Sci. Soc.—Transactions of the Clifton-College Scientific Society. Clifton (Bristol).

Trans. Conn. Ac. Sci.—Transactions of the Connecticut Academy of Sciences.

Trans. Devon. Assoc.—Transactions of the Devonshire Association for the Advancement of Science, Literature, and Art. Plymouth.

Trans. Edin. Geol. Soc.—Transactions of the Edinburgh Geological Society.

Trans. Geol. Soc. Glasg.—Transactions of the Geological Society of Glasgow.

Trans. Inst. Surv.—Transactions of the Institution of Surveyors. London.

Trans. Linn. Soc.—Transactions of the Linnean Society. 4to. London.

Trans. Manch. Geol. Soc.—Transactions of the Manchester Geological Society.

Trans. N. Engl. Inst. Eng.—North-of-England Institute of Mining and Mechanical Engineers. Transactions. Newcastle-on-Tyne.

Trans. Nov. Scot. Inst.—Transactions of the Nova-Scotian Institute of Natural Science. Halifax, N. S.

Trans. N. Zealand Inst.—Transactions and Proceedings of the New-Zealand Institute. Wellington.

Trans. Plymouth Inst.—Annual Report and Transactions of the Plymouth Institution.

Trans. R. Geol. Soc. Cornw.—Transactions of the Royal Geological Society of Cornwall. Penzance.
Trans. R. Irish Acad.—Transactions of the Royal Irish Academy. 4to. Dublin.
Trans. R. Soc. Edin.—Transactions of the Royal Society of Edinburgh. 4to.
Trans. R. Soc. N. S. Wales.—Transactions of the Royal Society of New South Wales. Sydney.
Trans. R. Soc. Vict.—Transactions and Proceedings of the Royal Society of Victoria. Melbourne.
Trans. Watford Nat. Hist. Soc.—Transactions of the Watford Natural-History Society and Hertfordshire Field Club. Watford and Hertford.
Trans. Woolhope Field Club.—Transactions of the Woolhope Naturalists' Field Club. Hereford.
Trans. Zool. Soc.—Transactions of the Zoological Society of London. 4to.

Verh. k.-k. geol. Reichs.—Verhandlungen der kaiserlich-königlichen geologischen Reichsanstalt. Vienna.
Verh. nat. Ges. Basel.—Verhandlungen der naturforschenden Gesellschaft in Basel.
Verh. Nat. Ver. Brünn.—Verhandlungen des Naturforschendervereins zu Brünn.
Verh. nat. Ver. Carlsruhe.—Verhandlungen des naturwissenschaftlichen Vereins in Carlsruhe.
Verh. nat. Ver. preuss. Rheinl.—Verhandlungen des naturhistorischen Vereins der preussischen Rheinlande.
Verh. schweiz. nat. Ges.—Verhandlungen der schweizerischen naturforschenden Gesellschaft. Schaffhausen.
Verh. Ver. nat. Unt. Hamburg.—Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg.
Verh. Würzb. phys.-med. Ges.—Verhandlungen der physikalisch-medicinischen Gesellschaft in Würzburg.
Versl. Med. Kon. Ak. Wet.—Verslagen en Mededeelingen der Koninklijke Akademie van Wetenschappen. Amsterdam.
Vid. Medd. Nat. Foren. Kjöbenhavn.—Videnskabelige Meddelelser fra den Naturhistoriske Forening i Kjöbenhavn.
Vid. Selsk. Skr.—Det Kongelige danske Videnskabernes Selskabs Skrifter, naturvidenskabelig og mathematisk Afdeeling. 4to. Copenhagen.
Vierteljahrsschrift nat. Ges. Zürich.—Vierteljahrsschrift der naturforschenden Gesellschaft in Zürich.

Wilts. Archæol. & Nat. Hist. Mag.—The Wiltshire Archæological and Natural-History Magazine, published under the direction of the Society founded in that county. Devizes.

Zeitsch. Berg-, Hütt. Salinenw.—Zeitschrift für das Berg-, Hütten- u. Salinenwesen im preussischen Staate. 4to. Berlin.
Zeitsch. Berg- Hütt. Ver. Kärnthen.—Zeitschrift der Berg- und Hüttenmännischen Vereins für Kärnthen.
Zeitsch. deutsch. geol. Ges.—Zeitschrift der deutschen geologischen Gesellschaft. Berlin.
Zeitsch. deutsch. österr. Alpenver.—Zeitschrift des deutsch-österreichischen Alpenvereins.
Zeitsch. gesammt. Nat.—Zeitschrift für die gesammten Naturwissenschaften. Originalabhandlungen und monatliches Repertorium der . . . Geologie, Oryktognosie, Palæontologie . . . Berlin.

ERRATA.

P. 2, line 19, for *Ann. Rep.* read *Proc.*

P. 8. **Burns.** The pre-glacial Irthing flowed westward, as now; in early post-glacial times it flowed to the east, into the Tyne. By subsequent changes the river returned to its old westerly course. W. T.

P. 10, line 7 from foot, *for* vol. *read* no.

P. 47, lines 4, 5, *before* no. *insert* t. xlviii., and *after* 63 *add* -107, 243–272, pl. i.

„ line 21, *for* Ostenburg *read* Ortenburg.

P. 48. Under **Baltzer,** *add* "and *Jahrb. schweiz. Alpenclub,* Jahrg. x. pp. 409–456."

P. 53, line 20 from foot, and in many other pages, after *Ges.* insert Bd. xxvii.

P. 65, line 13, *before* always *insert* not.

„ „ 17, *before* pp. *insert* vol. vi., and *after* pp. *insert* 46–49.

P. 72, line 23 &c. This entry should be in ASIA (p. 137).

P. 73, line 6 from foot, after *Stockholm* insert "Bd. ii."

P. 74, line 12 from foot, before *Neuchâtel* insert *Bull. Soc. Sci. Nat.*, and after *Neuchâtel,* insert "t. x. cah. 2."

P. 79, line 2 from foot, and p. 141, line 18 from foot, after *Sci.* insert "sér. 2, ann. 4."

P. 80. line 7, *after* **P.** *insert* **de.**

P. 82, line 15, for "*France,* Feb." read "*Paris,* sér. 6, t. x."

P. 90, line 6 from foot, and p. 91, line 9, *for* Thomsó *read* Tromsó.

P. 92, line 4 from foot, after *Bergakad.* insert "Bd. xxiii."

P. 101, line 8, *for* Rudoft's *read* Rudolf's.

P. 103, line 23, *for* 1874 *read* t. xlviii., and *after* 128 *insert* "132, pl. iii. (*Oxycarpia bifaria,* n. sp.)."

„ lines 26 and 29, *for* 1874 *read* t. xlviii.

P. 105, line 5. This paper was not published till 1876.

P. 109, line 2, after *Géogr* insert *Paris,* sér. 6, t. x.

„ line 7 from foot, *for* x. *read* xi.

P. 112, line 4 from foot, *for* **T.** *read* **J.**

P. 115, line 3, and many other pages, after *Philadel.* insert "ser. 3. vol. v."

P. 124, line 7, add *Washington.* The Geology of this Report is by **Prof. T. B. Comstock.**

„ line 11, *for* ix. *read* x.

P. 142. The paper by **Trautschold** should have been entered in EUROPE (p. 103).

P. 177, last line, *for* t. xxxiv. *read* Bd. xxvii.

P. 183. The entry **Hartley** should be in Supplement for 1874.

P. 194. After **Croll,** *for* **T.** *read* **J.**

P. 196, last line, before *Soc.* insert *Bull.*

P. 206. line 4, *add* vol. ii. pp. i–12.

P. 207, line 4, *for* xxvi. *read* xxvii.

„ „ 3 from foot, and other pages, *after* Soc. *insert* ser. 2, vol. xiii.

P. 212, line 19 from foot, *after* 36 *insert* "and *Proc. Amer. Acad.* vol. ii. p. 294."

P. 215, line 20 from foot, *for* xxx. *read* xxv.

P. 220, line 13 from foot, *for* 289 *read* 396.

P. 225, line 8, *for* **George** *read* **Gage**; and for *post,* ADDENDA, *read* "p. 242."

„ „ 16 from foot. for *post,* ADDENDA, *read* p. 202.

P. 227, line 14, *for* **W.** *read* **N.**

P. 230, line 23, *for* 14 *read* 74.

P. 233, line 3 from foot, after *Soc.* insert "ser. 2, vol. xiii."

P. 234, line 7, *for* Torbernite *read* Torbanite.

P. 237, line 25, *add* "and *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 388–391 (with Analysis by **Prof. Brush**)."

P. 240, line 12, *for* Pp. 416 *read* Pp. xxiv, 412.

P. 241, line 2, *for* xxvi. *read* xxvii.

„ „ 14 from foot, *add* "Published in 1874 in *Monatsb. k. preuss. Ak. Wiss.* pp. 685-689."

P. 245, line 5, and p. 320, lines 19, 20 from foot, for *Quart. Micr. Journ.* read *Quart. Journ. Micr. Sci.*

P. 249, line 20 from foot, for *Berg. Hütt. Jahrb.* read *Jahrb. k.-k. Bergakad.*

P. 250, line 11 from foot, after *Soc.* insert "ser. 2, vol. xiii."

P. 253, line 5 from foot, *for* ix. *read* x.

P. 265, **Pechin.** For "*post*, under ADDENDA," *read* p. 202.

P. 272, line 2, *for* L. *read* U.

„ „ 7 from foot, for *planirostus* read *planirostris.*

„ „ 14, *add* "and *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 381, 382."

P. 273, line 18, *after* species *insert a full stop.*

„ „ 24, *for* 8 *read* 7.

P. 278, line 13 from foot, *for* iv. *read* ix.

P. 283, line 2 from foot, for *Teratosarus* read *Teratosaurus.*

P. 285, line 16 from foot, after *Linn.* add *Norm.*

P. 299, line 18, for *punicingulatus* read *paucicingulatus.*

„ lines 21, 24, 29, for *Rengaronense* and *Rengaronensis* read *Pengaronense* and *Pengaronensis.*

P. 300, line 3, *for* 2 *read* xxi.

P. 301, line 14, for *Thelebensis* read *Thalebensis.*

Pp. 301, 315, 317. The entries from *Journ. Conchyl.* are from ser. 3, t. xv. of that Journal.

P. 303. **Dawson.** This entry should have been in the Supplement for 1874.

„ line 16, for *Triarthus* read *Triarthrus.*

„ „ 33, for *Fenestrellidæ* read *Fenestellidæ.*

P. 314, line 4, for *Bibl. Univ.* read *Arch. Sci. Phys. Nat.*

„ line 5 from foot, for *simiundulata* read *semiundulata.*

P. 315, line 14, dele the comma before *gigantea*, and *for* Gasteropods *read* Gasteropod.

P. 316, lines 13, 14 from foot, *transfer* Thl. ii. *to after* Pholadomyen.

„ lines 3 and 4 from foot, and p. 317, lines 1, 2, for *Cotyloderma* read *Cotylederma.*

P. 391, line 8 from foot. (**Lefèvre.**) This paper was not published till 1876.

P. 393, line 11, *for* viii. *read* ix.

P. 398, line 2, before *König.* insert *Nachr.*

THE
GEOLOGICAL RECORD
FOR 1875.

STRATIGRAPHICAL AND DESCRIPTIVE GEOLOGY.

1. *BRITISH ISLES.*

Andrew, Thomas. Geological and Archæological Papers. 8vo. *Northampton. Privately printed.*

1. The Geological Phenomena of Exeter and its Neighbourhood, pp. 1-20. Gives a general description of the various formations from Carboniferous to Drift, including the Granite of Dartmoor. Notices a section at Pocombe Hill, where a volcanic rock rests on the edges of Carboniferous shales. Gives some details of the beds found in various parts of the city, and traces the sequence of events through the various geological periods.

2. Dartmoor, pp. 21-47. Gives a sketch of the geology, pp. 22-25.

3. Mines and Mining in Cornwall and Devonshire, pp. 49-68. Notices theories of the origin of mineral veins, and some of the mineral phenomena of Cornwall. Notes the metalliferous localities of Devon. Describes the working of mines in the West of England. W. W.

Anon. [**A. B. Wynne.**] The Inverted Strata of the Mendips. *Geol. Mag.* dec. 2, vol. ii. pp. 566-568, woodcut.

Explains the occurrence of masses of Carboniferous Limestone resting on the Coal Measures at Luckington and Vobster by inversion and subsequent slippings. Examples of similar inversions are given from Afghánistan. W. T.

——. The Line between Highlands and Lowlands. *Nature,* vol. xii. pp. 93, 94.

Describes the work done in the field by the geological class of the University of Edinburgh. The great fault of Stonehaven was traced across the country to the Aberfoyl district. At Stonehaven it brings the Old Red against the Highland schists; but in other parts there are patches of Old Red and volcanic rocks on the N. of the fault, lying on the upturned edges of the schists. This fault is probably one of the greatest in Britain. It has not, however, produced any definite line of valley, but the lakes and valleys cross the fault. Comrie, famous for its frequent earthquake shocks, lies on the line of fault. W. T.

Anon. Handbook to the Local Museum formed by the Aid of the Bristol Naturalists' Society. Pp. 19. 8vo. *Bristol.* Geology, Palæontology, &c. pp. 8–18, by **E. B. Tawney.**

——. Excursion to Watford. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 284, 285.
Notes the Drift, Chalk, and the Chalk springs at Otterspool.

——. Excursion to the Isle of Sheppey. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 320–322.

——. [Notes of Geological Excursions to Aust Cliff, Sherborne, Wookey, and Radstock.] *Proc. Bristol Nat. Soc.* n. ser. vol. i. part ii. pp. 310–312.

——. [Account of Meetings at Banbury and Tenby.] *Proc. Warwick. Field Club,* 1874, pp. 55, 58, 59.
Note of bones and flint-implements from Pembrokeshire caves.

——. [Notes of Excursions.] *Ann. Rep. Belfast Field Club,* ser. 2, vol. i. pt. i. pp. 8–22.
Dungannon and Coalisland (Tyrone Coal-field); Glenravel and Cushendall, &c. Geological features noticed.

——. Report of Annual Excursion. *22nd Ann. Rep. Brighton Nat. Hist. Soc.* pp. 140–146.
Account of a visit to Battle and the Sub-Wealden boring.

——. [H. A. M.] Natural Curiosities at Cheddar. *Science Gossip,* no. 130, pp. 225–227.
A notice of the cavern and cliffs.

——. The Sub-Wealden Exploration. *Argonaut,* no. 17, pp. 158, 159.
Notice of progress.

——. Sub-Wealden Exploration. *Coll. Guard.* vol. xxix. pp. 20, 123, 310, 525, 782, 930; vol. xxx. pp. 24, 60, 310, 1006.
Notes of progress.

——. The columnar Basaltic Rocks of South Staffordshire. *Coll. Guard.* vol. xxix. p. 590.
Account of the Rowley Rag in Powke Hill quarry.

——. Lincolnshire or East Nottinghamshire Coal exploration. *Coll. Guard.* vol. xxx. p. 265.
Announces the striking, at nearly 2000 feet, of the Coal Measures by this boring, begun in L. Lias.

Anon. Interesting Geological Discovery at the Surrey Commercial Docks. *Coll. Guard.* vol. xxx. p. 307.

Note of discovery of forest-bed, 6 feet below the surface, with remains of *Bos primigenius.*

Barrois, Charles. Description Géologique de la Craie de l'Ile de Wight. [Chalk of the Isle of Wight.] *Ann. Sci. Géol.* ser. 4, t. vi. livr. 2, pp. 30. (An abstract of this paper was noticed in the GEOLOGICAL RECORD for 1874, p. 366.)

Gives a short topographical description, dividing the island into a northern and a southern *massif*; in the south he describes the Undercliff section from the Gault to the Chalk Marl, noticing the similarity of the U. Greensand to the "*gaize*" of Argonne, and pointing out that the Chalk Marl (zone of *Scaphites æqualis*) is the highest bed here exposed, on St. Catherine's Down, &c. He next describes the ridge of Chalk which stretches across the centre of the island, discusses the several faults which cut across this range, and finds the Chalk divisible into the same 9 divisions as in the N. of France (see GEOLOGICAL RECORD for 1874, p. 366). The plate is a map showing the area of the various snbdivisions, with 3 sections. A. J. J-B.

——. Ondulations de la Craie dans le Sud de l'Angleterre. [Undulations of the Chalk in the South of England.] *Ann. Soc. Géol. Nord*, t. ii. pp. 85–111.

The region treated of is included between the Cretaceous outcrop on the W. and the Wealden anticlinal on the E., while it is limited N. and S. by two parallel anticlinal folds, the axis of Kingsclere on the N. and the axis of the Isles of Wight and Purbeck on the S. The Chalk of this region forms a complete basin, the regularity of which, however, is interrupted by a median anticlinal, which the author calls the axis of Winchester; this stretches from Petersfield, through Winchester, to the Vale of Warminster, and divides the Hampshire Tertiary Basin into two—a southern synclinal called that of Hampshire proper, and a northern called the "Basin of Whitchurch"; the latter is much shallower, and contains no Tertiary deposits later than the London Clay. The Chalk is divided into horizons, the uppermost of which (Zone à *Belemnitelles*) only occurs in the central area of the basin; he believes that it never extended northward under the Tertiary outliers, below which he finds a lower zone of Chalk (Craie à *Marsupites*); and he concludes that the Winchester anticlinal began to be uplifted between the deposition of these two zones. He then considers post-Cretaceous oscillations. The axis of Kingsclere is identified with that of Artois; and though in England it disturbs nothing newer than Woolwich Beds, in France M. Eocene beds are affected by it; he therefore refers its production to U. Eocene times. The axis of Winchester is identified with that of Bresle; and its second upheaval was probably completed about the same time. The Isle of Wight axis is referable to the same period, and is a continuation of that of Bray. Lastly, the line of Dover Straits can have no connexion with this system of folds; and if any fault is to be feared in making the Channel Tunnel, it must be one at right angles to these. A. J. J-B.

Barrois, Charles. L'Age des Couches de Blackdown (Devonshire). *Ann. Soc. Géol. Nord*, t. iii. pp. 1–8.

Describes the U. Greensand of the Isle of Wight and Dorsetshire, corrects statements on the subject given in a previous paper [see above], and believes that the higher part of the U. Greensand of the Isle of Wight represents the Warminster Beds; the lower part represents the Blackdown Beds. These divisions are constant, and can be followed throughout the south of England. Lists of fossils are given. W. T.

—— Le Tunnel de la Manche. [The Channel Tunnel.] *Rev. Sci.* 2 sér. 4 ann. pp. 1070–1072, 1192, 1193.

Gives the succession of Cretaceous strata in the Hampshire Basin, and describes the various anticlinals and flexures which traverse the S.E. of England and the N. of France. Correlates the axes of elevation as follows:—Kingsclere and Artois, Winchester and Bresle, Isles of Wight and Purbeck and the Pays de Bray. The Weald contains many lines of upheaval; that of Wadhurst is correlated with the lines of Winchester and Bresle. Reference is made to the transverse lines of disturbance. The chief object of the paper is to prove that the Strait of Dover has no connexion with the axis of the Isle of Wight, as had been maintained by a writer in the 'Revue' (nos. 39 & 47). W. T.

Bassett, A. On "the Diamond-drill." *Proc. S. Wales Inst. Eng.* vol. ix. pt. ii. no. 1, p. 130, plates 15–19.

The plates give sections at Risca. [The same as the paper noticed in the Geological Record for 1874, p. 3.]

Birds, J. A. Post-Pliocene Formations of the Isle of Man. *Geol. Mag.* dec. 2, vol. ii. pp. 80–85.

Authors have hitherto regarded the Boulder Clay of the Isle of Man as of one age. Mr. Birds' examination of the district has led him to the conclusion that the Upper Boulder Clay of the mountains has been confounded with the Lower Boulder Clay of the coast cliffs, and that therefore a threefold division of the Drift exists, as follows:—A. *Newer Glacial Formations. Upper Boulder Clay*, with angular or slightly rolled stones, almost exclusively of local origin, and occasional intercalations of sand and gravel; generally occupying higher ground than the next deposit, and supposed to have been mainly formed by floating ice about the period of the second submergence.—B. *Older Glacial Formations.* 1. *Stratified Sands and Gravels*, containing an abundance of well-rolled, far-derived stones, and thought to have been deposited from far-travelled floating ice during the period of the great submergence; seen to a thickness of 15 feet. 2. *Lower Boulder Clay*—brown clay, with beds of sand and gravel, containing not many stones, and only a few of far-derived materials; seen to a thickness of 100 to 150 feet, and supposed to have been ground up beneath land-ice, and deposited in the sea during the period of the first depression. The paper is illustrated by diagrams, and contains a list of works relating to the Geology of the Isle of Man. J. G. G.

Birds, J. A. Postscripts to the Paper on the Post-Pliocene Formations of the Isle of Man. *Geol. Mag.* dec. 2, vol. ii. pp. 226–228, 428–430.

The object is to maintain the author's classification of Manx Drifts against that of Mr. Horne, who thinks that the deposits described by Mr. Birds as Upper Boulder Clay represent the Upper and Lower Boulder Clays of Scotch geologists, that his Middle Sands and Gravels are the equivalents of the Kame series, and that his Lower Boulder Clay should be regarded as the equivalent of the shelly beds of the Clyde. The author, while admitting that intercalated beds are common in his Lower Boulder Clay, considers that we should expect a more frequent occurrence of such intercalations in the Upper Boulder Clay, which was formed when the cold was not very intense and the ice was comparatively thin, than in the Lower Boulder Clay, which Mr. Horne considers was formed when the cold was at its extreme, and the ice was from 2000 to 3000 feet thick; and that, therefore, the highest beds in the Isle of Man are, so far, more likely to be Upper than Lower Boulder Clay. J. G. G.

Blake, Rev. J. F. On the Kimmeridge Clay of England. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 196–233 (plate and woodcut map *).

After a notice of the classification proposed by previous writers, the author describes the beds as follows:—*Upper Kimmeridge* (*Virgulian*); shales and cement-stones, with fossils of few species but many individuals. It is 650 feet thick at Kimmeridge, thick also in Lincolnshire, but thin in central England. The Middle Kimmeridge (*Pterocerian*) appears to be absent in England; the beds referred to this horizon by Dr. Waagen the author classes with the Lower Kimmeridge; here, too, he is inclined to place the beds exposed E. of Kimmeridge Bay, and part of those in Ringstead Bay. *Lower Kimmeridge* (*Astartian*); Clay with Calcareous "doggers," from 300 to 500 feet thick in Ringstead Bay, perhaps about 400 feet in Lincolnshire; it is well developed in the inland counties. *Kimmeridge Passage-Beds*, 20 feet thick at Weymouth; these are only present when the Coral Rag occurs below them, many fossils of the latter passing up into them; they are absent in Lincolnshire. Lists of fossils from numerous pits are given; also a table showing the vertical and geographical distribution of the fossils. There are many forms common to the Oxford and Kimmeridge Clays.

The following new species are described:—*Gyrodus ornatissimus*, *Pycnodus quincuncialis*, *Rostellaria Rasenensis*, *Natica punctulata*, *Cerithium forticostatum*, *C. crebrum*, *C. multiplicatum*, *Trochus excavatus*, *T. retrorsus*, *Lucina minuscula*, *Cyprina cyreniformis*, *Anatina minuta*, *Pholadidea abbreviata*, *Leda lineata*, *Nucula obliquata*, *Arca longipunctata*, *A. reticulata*, *Inoceramus expansus*, *Avicula ædilignensis*, *A. nummulina*, *A. vellicata*, *A. Dorsetensis*, *Lima ædilignensis*, *Discina elevata*, *Vermicularia contorta*, *Scalpellum reticulatum*. W. T.

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* There is a mistake in the Index to this map, Upper Kim. of the Index referring to Lower Kim. of the Map.

Blake, Rev. J. F. Sub-Wealden Exploration. *Nature*, vol. xi. pp. 267, 268.

Suggests another site for the boring, in consequence of the great thickness of the Oolites under Netherfield.

Bonney, T. G. Cambridgeshire Geology. Pp. 82. 8vo. *Cambridge.*

The Introductory Chapter gives a general description of the different members of the Secondary Series, as exhibited in traversing England from Devon to Yorkshire. The physical geography of the Cam Valley is next briefly indicated, from the sources of the river to its union with the Ouse in the Fens. The deposits which occur within the limits of sheet 51 of the Ordnance Survey Map are then described, beginning with the Oxford and Kimmeridge Clays, with the subordinate calcareous bands of St. Ives and Elsworth, and the local exposure of Coral Rag at Upware. This last division is apparently absent in other parts of the country, and seems here to have formed a coral island, against which the Neocomian and Gault are banked up. The Neocomian Sands, which stretch from Sandy and Potton to Ely, are next noticed; and above these comes the Gault, of which the best section is at Barnwell. An account of the Cambridge Greensand or Coprolite-bed, its constitution, origin, and contents, is then given; regarding the last, Mr. Bonney has long maintained that they have been derived from the erosion of the Gault. The Greensand passes above into the Chalk Marl or Clunch, as it is locally termed, which is briefly described. Lastly, the Post-pliocene deposits are treated of under the following heads:—Boulder Clay, Coarse Hill Gravel, Fine Gravel of the Plains, Older Peat, Buttery Clay, and Newer Peat. In the Appendices are details of the Sections at Upware, Ely, and Hunstanton; also a few notes on the Water Supply and Building Stones of Cambridge. A. J. J-B.

Bott, Arthur. The Geology of Camberwell. Pp. 9–27 of "*Ye Parish of Camerwell,*" by W. H. Blanch. 3 plates (fossils and section). 8vo. *London.*

Gives details of borings along the Southern High Level Sewer and of various wells; describes the various beds, from the Chalk to the Gravels and Peat; gives lists of the fossils from the Woolwich Beds of the parish, from 3 places (Dulwich, Peckham, and Camberwell), with figures and notes of the more remarkable, and of the fossils from the London Clay of Sydenham Hill and Dulwich Wood (by **C. Evans**, now first published). W. W.

Boulger, G. S. Irish Cave Exploration. *Nature*, vol. xii. p. 212.

Notes the exploration of a cave at Shandon, near Dungarvan, co. Waterford. Bones of Mammoth, Reindeer, Bear, &c. were found in cave-earth under a floor of stalagmite. W. T.

Brodie, Rev. P. B. On the Lower Lias at Eatington and Kineton, and on the Rhætics in that neighbourhood, and their further extension in Leicestershire, Nottinghamshire, Lincolnshire, Yorkshire, and Cumberland. *39th Ann. Rep. Warwick. Nat. Hist. Soc.* pp. 6–17.

Describes sections on the railway from Statford to Kineton, in New Red, Rhætic Beds, and Lias. The beds are disturbed and faulted in places. Details of Harbury cutting are given, showing many layers of limestone, with a list of the fossils found there. The occurrence of the "insect-bed" at the Copt Heath outlier is noted, as also that of the Rhætic Beds at Spinney Hills, near Leicester. W. W.

Brown, Thomas F. On the South Wales Coal-field. *Proc. S. Wales Inst. Eng.* vol. ix. pt. i. no. 2, pp. 59–129, plates 10–14; and pt. ii. no. 2 (=plate 9) (map, plans, and sections), and no. 3, pp. 151–153. [? The same as the paper noticed in the GEOLOGICAL RECORD for 1874, p. 5.]

History (and statistics), pp. 59–65; Extent of Coal-field, pp. 66, 67; Older formations (Millstone Grit, Mountain Limestone, Old Red, Silurian, Hypogene), pp. 67–69; Scenery, 69, 70. Description of strata [of the Coal-field]:—1. Upper Pennant Series; 2. Lower Pennant Series (with analyses of ironstones); White Ash Series, pp. 70–75. Ironstones, with analyses, pp. 75–80. Fire-clay, &c., Faults, Slips, Anticlinal, pp. 80, 81. Change of Quality [in the coals], with Theories thereof, pp. 82–84. Statistics, Winning, Mode of Working, &c., pp. 84–121. Future Prospects, Newer Formations, pp. 121–123. Fossils: a list of the more important, in the Museum of the Cardiff Naturalists' Society, pp. 123–126. Appendix: Particulars of Coal-seams in the W. division of the Coal-field, pp. 127–129. The Map is on a scale of 2 inches to a mile; the General Vertical Section in the E. part of the Coal-field on a scale of 120 feet to an inch. W. W.

——. On "Metal Dams, or Tubbing, &c. &c." *Proc. S. Wales Inst. Eng.* vol. ix. no. 3, p. 154, plates 21–24.

Notes on the Forest of Dean Coal-field. Pl. 21 is a map of the field; pl. 22 a section across it from N. to S.; pl. 23 a "section of the strata sunk through at Bowson Colliery." W. W.

Buckman, Prof. J. The Geology of the County of Cornwall in reference to Agriculture and Rural Economy. *Journ. Bath and W. Engl. Soc.* ser. 3, vol. vii. pp. 156–168.

Notices the physical features and climate of the county, and describes the different formations represented in it, and the relative superficial area which they occupy. The soils on each formation are noticed, and attention is drawn to the modifying influence of the mineral wealth upon the agriculture of the county. H. B. W.

——. On the Cephalopoda Bed and the Oolite Sands of Dorset and part of Somerset. *Proc. Somerset. Archæol. Nat. Hist. Soc.* vol. xx. pp. 140–164.

Having described the beds seen in three quarries near Bradford Abbas, and enumerated the fossils obtained from them, the author expresses his opinion that the Dorset Cephalopoda-bed is the representative of the Rubbly Oolite at the top of Leckhampton Hill and of Cold Comfort, and consists of the Gryphite and Trigonia Grits of Hull's

'Geology of Cheltenham.' Further, he considers that the underlying sands are the representatives of the lower members of the Inferior Oolite of Gloucestershire, at least for 100 feet of their thickness.
H. B. W.

Burns, David. On some of the Recent Geological Changes around Haltwhistle [Northumberland]. *Ann. Rep.* [*27th*] *Northumb. Union of Mechanics' Institutes.* 8vo. *Newcastle.* Pp. 17–21.

Describes the glaciation of the district. The great features of the country are the same now as before the Glacial period. Minor differences are described—*e.g.* the Irthing, which now flows westwards, in preglacial times flowed eastwards into the Tyne at Haltwhistle. Concludes with observations on the educational value of Geology. W. T.

Carne, Elizabeth T. Inquiry into the Nature of the Forces that have acted in the Formation and Elevation of the Land's End Granite. *Trans. R. Geol. Soc. Cornwall,* vol. ix. pt. i. pp. 132–151.

Begins by discussing—1. The internal structure of Cornwall; 2. The external configuration of the whole surface; 3. The jointed structure of the granite; 4. Its composition; 5. The dip of the granite and the slate. Then refers to the three theories of the origin of granite:—1, of eruption; 2, of metamorphosis; 3, the contemporaneous theory. Is of opinion that the first two are inadmissible, and only accepts the last in its broader sense, namely, that the circumstances which have influenced the formation of both rocks, and the forces that have acted on them, are closely related. Concludes that the granite was elevated, and the joints and cross-courses formed, by an undulatory force. C. L. N. F.

Coode, Sir J. Report to the Board of Trade on the Coast-Line at Landguard Common. *Parliamentary Papers, Sess.* 1875, no. 57. fol. Lond. Pp. 4, with plan.

A description of the shingle and of the land overflowed by the tides, with suggestions for the preservation of the coast-line.

Cornish, Thomas. Memorandum on the Discovery of Hazel-nuts in Tin-stream at St. Hilary. *Trans. R. Geol. Soc. Cornwall,* vol. ix. pt. i. pp. 98, 99.

The hazel-nuts were found in peat, overlying stream-tin.

Cossham, Handel, E. Wethered, and **W. Saise.** The Northern End of the Bristol Coalfield. *Coll. Guard.* vol. xxx. pp. 417–420, 3 plates (coloured maps and sections).

Trace the progress of coal-mining in the district. Describe the various coal-seams. Give analyses of many coals. Treat of the correlation of the beds in various parts of the coal-field. Notice the faults and other disturbances. The plates contain a geological map of the area described; Sections 1, 2, through Lodge Hill; 3, from Fishponds to the Avon; 4, of the N. end of the coal-field; 5, of Golden Valley; and copies of two old maps. W. W.

Coutts, James. On the Post-tertiary Clay-beds at Kilchattan Bay, Isle of Bute. *Proc. Glasg. Nat. Hist. Soc.* vol. ii. pt. 1.

Describes the section in Kilchattan Clay-field, and gives a list of marine shells, Polyzoa, Crustacea, &c. in a shell-bed included in the section. J. E. T.

Craig, T. On supposed Lake or River Terraces near Kelso. *Proc. Berwick. Nat. Club*, vol. vii. no. 2, pp. 190–192.

Describes remains in the valley of the Tweed. In a distance of about half a mile there are 14 or 15 at different heights. They often lie *transversely* to the general direction of the valley, running upwards for 70 or 80 feet. Although apparently connecting them with "the ancient river or lake," the author does not offer any theory to account for these "terraces." W. T.

Cross, Rev. J. E. The Geology of North-west Lincolnshire. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 115–130, plate (fossils) and 3 woodcuts. Appendix, describing the fossils, by **R. Etheridge.**

The rocks described range from the Keuper to the Cornbrash; the Rhætics are believed to be absent. The Lower Lias is largely developed. The ironstone of Scunthorpe is shown to lie low down in the Lower Lias; this band is 27 feet thick, and contains about 27 p. c. of iron. The true Middle Lias is only 8 feet thick, abounding in *Rhynchonella tetrahedra*; the *Amm. margaritatus* beds seem to be absent. The Lincolnshire Limestone averages about 36 feet; below it are the "Santon Oolites," differing from it but little in appearance, but containing a distinct fauna. Lists of fossils are given, and the following new species are described:—*Tancredia ferrea*, *T. Liassica*, *Hippopodium ferri*, all from the Lower Lias; *Cucullæa Rolandi*, *C. Santonensis*, *Astarte divaricata*, from the Inferior Oolite. W. T.

Crosskey, Rev. H. W. Second Report of the Committee appointed for the purpose of recording the position, height above the sea, lithological characters, size, and origin of the more important of the Erratic Blocks of England and Wales, reporting other matters of interest connected with the same, and taking measures for their preservation. *Rep. Brit. Assoc.* for 1874, pp. 192–200.

Details the methods of work. Boulders are rapidly disappearing as road- or building-material or for purposes of cultivation; the Report points out the importance of recording those which remain, and dwells upon the light which such knowledge may throw upon glacial phenomena. Returns are given from the following districts:—Rothbury, Northumberland; near Keighley, Yorkshire; Scambrick, Lancashire; the country around Birmingham; various parts of Leicestershire and Warwickshire; Teignmouth, Devon; Llanrwst, Denbigh. W. T.

Crosskey, Rev. H. W., and David Robertson. The Post-Tertiary Fossiliferous Beds of Scotland. *Trans. Geol. Soc. Glasg.* vol. v. part i. pp. 29–35, 1 fig. in text.

No. xx. of this series of papers. The localities (in the Kyles of Bute) where the clays collected from were found are:—*Tigh-na-Bruiach* (1. Boulder Clay, 2. Laminated Clay, 3. Shell-bed); *Balnakaile Bay* (1. Boulder Clay, 2. Laminated Clay, 3. Arctic Shell Clay, 4. *Pecten maximus* Sand and Clay); *Ettrick Bay* (succession obscure). A list of fossils is given. G. A. L.

Crutwell, A. C. The Great Rhætic Bone-Bed near Frome. *Geol. Mag.* dec. 2, vol. ii. p. 96.

Notes its discovery, at 310 feet deep, in a pit sunk to the Lower Coals, about 2 miles N.W. of Frome.

Daglish, T., and R. Howse. Some Remarks on the Beds of Ironstone occurring in Lincolnshire. *Trans. N. Eng. Inst. Eng.* vol. xxiv. part i. pp. 23-33, 4 plates (map, plan, and sections).

Iron-ore occurs in Lincolnshire in the Lower and Middle Lias, Lower Oolite, and Neocomian. The L. Lias bed is a calcareous hydrated oxide; it is worked at Frodingham, occurs in the middle of the L. Lias, and has a maximum thickness of 25 feet; the p. c. of iron varies from 12 to 40. The M. Lias ironstone also occurs near Frodingham; here it is of poor quality; but it improves to the south, and is largely worked at Caythorpe, near Grantham; this bed is probably on the horizon of the Cleveland ironstone. The ironstone of the L. Oolite is the equivalent of the Northampton Sand ore; it underlies the "Lincolnshire Limestone," is most fully developed near Lincoln, but thins out to the north. It is a siliceous ore, containing about 40 p. c. of iron; in some pits it partly takes the form of carbonate. The Neocomian ore is worked near Caistor. It is a calcareous hydrated peroxide, containing 25 p. c. of iron. The workable bed is about 7 feet thick, and abounds with shells of *Pecten cinctus*. Analyses of the ores and sections of the beds are given. W. T.

Dakyns, J. R., and J. C. Ward. Volcanic Rocks of the Lake-country. *Geol. Mag.* dec. 2, vol. ii. p. 95.

Note the discovery of beds of volcanic ash of the Green Slate and Porphyry series interbedded with the Skiddaw Slates, at Swindale, near Shap. W. T.

Dalton, W. H. A Brief Sketch of the Geology of Colchester. *Essex Standard*, Nov. 5. (Reprinted in a separate form.)

The Chalk, Lower London Tertiaries, London Clay, Red Crag, Glacial, Post-Glacial, and Recent Deposits occur in the district. The range, nature, and fossils of each are described, and a list of points requiring further research is given. W. H. D.

Danvers, F. C. The Channel Tunnel. *Quart. Journ. Sci.* vol. xlviii. pp. 486-504.

An account of the various projects, with reference to geological conditions.

Davey, E. C. The Geology of Wantage and its surroundings. (A lecture.) *Jackson's Oxford Journal*, no. 6369, April 24.

A general description of geology and its practical bearings. Describes the bed of greensand or firestone upon which Wantage is built. In this bed the author has found nearly 50 species of fossils. A. J. J-B.

Davies, D. C. The Phosphorite Deposits of North Wales. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 357–367.

At the top of the Bala Limestone is a bed, 10 to 15 inches thick, full of nodular concretions of phosphate of lime. The nodules contain about 64 p. c. of phosphate; the matrix contains about 46 p. c. Graphite occurs in the matrix and around the concretions. The underlying limestone, usually only 6 inches thick, contains from 15 to 20 p. c. of phosphate. Fossils in the overlying shale are phosphatized. These beds have been traced over a large area. The author regards the phosphate bed as an old sea-bottom, in which the phosphate derived from Crustacea and Mollusca accumulated. Analyses are appended. W. T.

Davies, T. G. Observations on the Llynfi and Rhondda Mineral District. *Proc. S. Wales Inst. Eng.* vol. ix. part i. no. 2, pp. 32, 33. Discussion (partly also on Mr. Barrow's paper), pp. 33–39, and no. 3, pp. 142–145, pl. 20. Plates 1–3 (map and sections).

The paper is explanatory of the sections. One of these is a transverse section from the Glyncorrwg fault to Dunraven Colliery, Rhonda Valley. The others are comparative vertical sections at Carnarvon, Maesteg, Ogmore Valley, Clydach Vale, and Dinas. Pl. 20 is a "Plan showing the course of the Glyncorrwg Fault, from Blaen Corrwg to Afon Valley," by **H. K. Jordan.** W. W.

Davis, J. E. Rambling Thoughts in a Hanley Marl Pit. *N. Staff. Field Club Papers*, pp. 68–79.

Descriptive of Coal and its formation.

——. On the Absence of Waterfalls in the Scenery of North Staffordshire. *N. Staff. Field Club Papers*, pp. 146–156.

Concludes that the reason there are no waterfalls is that "there are no alternating beds of trap or other hard rocks to interfere with the gradual descent of streams." W. W.

De Rance, C. E. The Geology of the Country around Blackpool, Poulton, and Fleetwood. (Sheet 91 S.W. of the Geological Survey Map of England and Wales.) 8vo. *Lond.* Pp. 14.

The Keuper has only been reached in borings. The district is covered by alluvial and glacial beds, which are described in the following order:—*Glacial*—Lower Boulder Clay, Middle Sand and Shingle, Upper Boulder Clay; *Pre-historic*—Preesall Shingle, Lower Scrobicularia Clay, Lower Cyclas Clay, Peat; *Recent*—Marsh Clay and Tidal Alluvium, Upper Scrobicularia Clay, Upper Cyclas Clay, &c., Blown Sand. In the Appendix is given the percentage of stones in different samples of the Boulder Clay, and a list of heights. W. T.

——. On the Relative Age of some Valleys in the North and South of England, and of the various [Glacial] and Post-Glacial Deposits occurring in them. *Proc. Geol. Assoc.* vol. iv. no. 4, pp. 221–253, Passes under review the Drift-deposits of Lancashire, Cheshire, the Lake District, the Avon, Hoxne, Bedford, Thames Valley, Medway, Folkestone, S. and S.W. coasts, and French coast. The sequence of beds is described; and the author believes that the succession of glacial beds in Hertfordshire and the E. of England can be correlated with that of Lancashire. The glacial submergence was greatest to the N.W.; the country S. of the Thames was probably not submerged. In the N.W. of England many of the valleys are pre-glacial; these were largely filled up during the glacial period, and have been re-excavated since. The valley of the Lower Thames is post-glacial. W. T.

Desmarets, Nicolas. L'Ancienne Jonction de l'Angleterre à la France; ou le Détroit de Calais, sa formation par la rupture de l'isthme, sa topographie, et sa constitution géologique. *Paris,* 12mo, 1875, pp. xvi, 114; map and diagram. [Reprint of a Prize Essay at the Academy of Amiens, in 1751.]

The first part treats of the reasons, historical and physical, for believing that at one time an isthmus joined England to the continent—the gradual narrowing of the sea, and the similarity of the strata and of the hills on either side, being dwelt upon. The second part treats of the means by which the isthmus has been destroyed. Volcanic action is rejected, there being no evidence of it. Detailed description is given of the action of weather and frost on rocks, especially on chalk cliffs; and it is shown that the constant wearing action of the tides, aided by the weather, suffices to wear away cliffs. The rapid narrowing of the channel, then closed at the apex, would give great force to the western waves. Romney Marsh is believed to have been formed from the material worn away. Frequent illustrations are drawn from coast-action in other parts of the world. W. T.

Dixon, James S. On an Ancient River-course at Auchinlea, parish of Shotts. *Proc. Glasg. Nat. Hist. Soc.* vol. ii. pt. 1.

Gives an account of a river-course in the main coal seam of the Lanarkshire coal series by the Midhill Pit. The depth from the surface at one point was 130 feet; hence the author thinks that the river must have been of long duration. J. E. T.

Du Noyer, G. V., Prof. J. B. Jukes, and **Prof. E. Hull.** Explanatory Memoir to accompany sheets 102 and 112 of the Maps of the Geological Survey of Ireland. With Palæontological Notes by **W. H. Baily**. Edit. 2. Pp. 75. 19 woodcuts. 8vo. *Dublin.*

The chief places in the district are Dublin, Kingstown, Malahide, Swords, and Skerries, with Howth and Lambay Island. A considerable portion of the Dublin mountains is included to the south. The formations are:—Granite, Trappean Ash, Felstone Porphyry, Diorite; Cambrian, L. Silurian, Carboniferous (Limestone and Shales), Pleistocene (Drift), Bog, Alluvium. The granitic rocks stretch southwards from near Kingstown into the Dublin mountains, in which localities the L. Silurian, often highly metamorphosed, is also found. At Howth the Cambrian beds appear, and the northern portions of the district are mostly occupied by the Carboniferous rocks, with, near Donatrale and Skerries, some L. Silurian rocks again. At the former locality, and also at Lambay Island, are large masses of a dark green porphyritic rock, hitherto believed to be a hornblendic greenstone; but microscopic examination has shown it to be a felstone porphyry, hornblende being rarely if ever present. The Carboniferous Limestone in the neighbourhood of Lough Shinny is contorted to an extraordinary degree. Sections are given showing this. The Drift can be divided at Howth and Killiney into L. Boulder Clay, Middle sands, U. Boulder Clay. Shells have been got from the Drift on the Dublin mountains at heights of from 1000 to 1200 feet above the sea. A raised beach is traced along the shore in parts of the district. E. T. H.

Evans, C. Excursion to Hampstead. *Proc. Geol. Assoc.* vol. iv. no. 3, p. 155.

Evans, C. and J. L. Lobley. Excursion to Riddlesdown and Croydon. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 282, 283.

Describes the subdivisions of the Chalk.

Filby, Dr. [Geological recollections of a few weeks at Weymouth.] *Verhandlungen des Vereins für naturwissenschaftliche Unterhaltung zu Hamburg*, 1871–74.

Fisher, Rev. O. Submerged Forests. *Geol. Mag.* dec. 2, vol. ii. pp. 283, 285.

Remarks that the old stumps are always enveloped in or covered by a mud containing *Scrobicularia*; this proves submergence, a subsequent elevation of 8 to 10 feet having occurred. W. T.

Fordham, H. G. On a Collection of Fossils from the Upper Greensand of Morden, Cambridgeshire. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 150–152.

The phosphatic bed is from 1½ to 3½ feet thick. A list of fossils collected at Morden and Ashwell is given. As compared with those from near Cambridge, the author notes that they are less perfect. *Echini* and Crustacea are rare; Belemnites abundant. W. T.

Foster, Dr. C. Le N. Notes on Haytor Iron-Mine. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 628–630, 2 woodcuts.

The iron-ore (magnetite) occurs in four beds interstratified with altered shales and sandstones of Carboniferous age. The beds strike E. 25° S.; but the line of junction of the Carboniferous rocks and the granite strikes here about N. and S.; the granite has therefore broken across the strata. Above one of the beds of magnetite is a thin vein of granite, apparently interstratified, but which is proved on examination to break across the rocks. The iron-ore perhaps originated in the form of beds like the Cleveland ore, and has been altered into magnetite, the neighbouring rocks having become extremely silicified; but possibly the apparently stratified magnetite may have been formed by ferruginous emanations. Actinolite and garnets are present, as they always are with magnetite; their origin can be explained under either hypothesis. W. T.

Foster, Dr. C. Le N. Remarks on the Lode at Wheal Mary Ann, Menheniot. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. i. pp. 152–157, 3 woodcuts.

The lode traverses clay-slate or 'killas,' running a few degrees E. of N., and dipping E. 60° to 80°. Sections of the lode at various points are given; and its history is inferred as follows:—1. Formation of fissure and probable shifting of the strata; 2. Deposition of the *cab* (a sort of chalcedony), partly filling up the fissure, and cementing fragments of the wall into a breccia; 3. Reopening of the fissure, the new line sometimes coinciding with the original wall, sometimes intersecting or running in the middle of the *cab*; pieces of the walls and of the previously formed *cab*-lode fell in, and then the other minerals were deposited successively in the open spaces. There have been at least two periods of the formation of fluor spar; the galena was deposited at an intermediate period; and the last minerals have been quartz, chalybite, and calc spar. W. T.

——. Note on Belowda Hill Mine. *Journ. R. Inst. Cornwall*, no. xvii. 1875, p. 213.

Considers the so-called lode to be granite altered by solutions brought up through the veins by which it is traversed. The felspar has been replaced by schorl and tinstone. C. L. N. F.

Gilbert, John. Notice of a Vugh in St. Ives Consols Mine. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. 1, pp. 158–160.

This vugh was a natural cavern in granite, 15 feet long, 12 wide, 10 high, lined with large crystals of quartz, and continuing with smaller dimensions for more than 12 fathoms. It went off at right angles from a lode at a depth of about 190 fathoms from the surface. C. L. N. F.

Glen, David C. Notes from the Island of Bute. I. On a Tract of Columnar Sandstone and a Perched Boulder, near Kilchattan. II. On a Magnetic Sand from East Bay, Rothesay. *Trans. Geol. Soc. Glasg.* vol. v. pt. i. pp. 154–159, 1 fig. in text.

Notes of occurrence.

Goodchild, J. G. The Glacial Phenomena of the Eden Valley and the Western part of the Yorkshire-Dale District. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 55–99, pl. ii. (map) and 15 woodcuts.

Describes the evidence for the ice-sheet and the distribution of boulders. Glacial markings on Baugh Fell seem to indicate a height of not less than 2300 feet for the upper surface of the ice-sheet. On one side of a line shown on the map the ice moved southwards; on the other side it flowed northwards as far as the Eden Valley, where, by the blocking up of the lower part of the valley by ice from the N.W., the local ice was turned up the valley over Stainmore towards the North Sea, carrying with it all the boulders from E. of a line through

Ullswater and Cross Fell, together with many from the N.W. of the Lake District and the S.W. of Scotland. After giving reasons for rejecting any theory of boulder transport by floating ice, the author discusses the effects of glacial erosion upon the preglacially weathered surface. He then considers the origin of the various forms of Drift, and concludes that they are the variously modified forms of sediment once dispersed throughout the entire thickness of the ice-sheet, and that they contain no evidence of marine action. Calls attention to the limited amount of denudation that has taken place in Post-Glacial times. J. G. G.

Grainger, Rev. Dr. J. On the Fossils of the Post-tertiary Deposits of Ireland. *Rep. Brit. Assoc.* for 1874; *Sections*, pp. 73–76.

Gives lists of fossils from the following localities, the figures denoting the number of species at each:—Dungiven, co. Derry, 6; Ballyrudder, co. Antrim, 35; Balbriggan, co. Dublin, 24; Howth, co. Dublin, 22; Ballybrack, near Killiney, co. Dublin, 13; Larne Curran, co. Antrim, 25; Portrush, co. Antrim, 54. W. T.

Green, Prof. A. H. Variation in thickness and character of the Barnsley and Silkstone Coal-seams in South Yorkshire, and the probable origin of this and similar changes. *Coll. Guard.* vol. xxx. pp. 601, 602.

Report of Address at Meeting of N. of England and Midland Engineers. Will be published in full.

Greenwell, G. C. On Basalt and its Effects. *Trans. Manch. Geol. Soc.* vol. xiii. pp. 304–324, plate, and *Coll. Guard.* vol. xxix. pp. 342, 343.

The British localities and physical characteristics of Basalts are described, especially that of Salisbury Crags and the Garlton district, near Addington. The Whinstones of the north of England are classified into dykes, running in straight lines, like the Cockfield Dyke, 60 miles in length, and surface overflows, as the great Whin Sill of Durham. Concludes with a notice of the Antrim basalts, which are described as resting on "Coal-measures" [? Miocene lignites] east from the Giants' Causeway. C. E. De R.

Greenwood, Col. G. Denudation of the Weald. *Geol. Mag.* dec. 2, vol. ii. pp. 282, 283.

Claims priority as regards the subaërial theory of the Denudation of the Weald. The gravels of the Weald, and their bearing on this theory, are referred to. W. T.

Grieve, D. Note relative to the Bed of the South Esk River at Newbattle, in connection with Fossils found there. *Proc. R. Phys. Soc. Edin.* sess. 1874–75, pp. 57–60.

Refers to a portion of the river between Newbattle and Lothian bridge. The bed is composed of horizontal micaceous sandstone, with several species of Carboniferous ferns and other plants, a list of which is given. Amongst the former may be noticed the abundance of *Pecopteris Serlii.* R. E., Jun.

G[riffith], C. Geological List. *3rd Rep. Winchester Coll. Nat. Hist. Soc.* pp. 132–135.

For the most part a reprint of the list printed in the 2nd Report (1873). Names 23 sections, with the fossils found in each, and gives a synopsis of local species (from the Chalk). W. W.

Griffith, C. The Chalk Formation. *Journ. Winchester Sci. Soc.* vol. i. pt. 4. pp. 246–258.

A general account of the Chalk, its extent, denudation, and composition, the origin of its flints, its fossils, and the conditions of its deposition. W. W.

Groves, Thos. B. The Chesil Bank. *Nature,* vol. xi. p. 506.

The abrupt termination of the bank at Portland is believed to be due to its being exposed to the waves produced by the prevailing S.W. wind, so that the progressive action from the W. and W.N.W. is nullified. C. E. De R.

Gunn, John. On the probability of finding Coal in the Eastern Counties. *Proc. Geol. Assoc.* vol. iv. no. 1, pp. 35–44. [A fuller version of the paper noticed in the GEOLOGICAL RECORD for 1874, p. 14.]

Argues that from the Chalk, which was originally deposited horizontally, having been upraised about 1700 feet at Hunstanton, Palæozoic rocks are proportionately nearer to the surface, and notices the borings at Kentish Town, Harwich, and Calais, which have touched such rocks at great depths. The views of Mr. Godwin-Austen on the underground extension of the Palæozoic ridge are noticed; and the author, agreeing with them, advises trial borings in S. Essex and at Hunstanton, opposing the conclusions that in Norfolk and Suffolk no productive coal could reasonably be looked for, and that those counties consisted of barren Palæozoic rocks during the coal period. The paper is a summary of the discussion on the subject, and is the same as that read to the Norwich Geological Society in March 1874. W. W.

——. Well-boring at Messrs. Hill's and Underwood's Distillery, and Discovery of Human Remains from the ancient Bed of the River. (*Norwich Geol. Soc.*); reprinted from the *Norwich Mercury,* April 10.

The skull was found in a river-deposit at a depth of 40 feet, Chalk being reached at 42 feet.

Hall, Townshend M. Notes on the Anthracite Beds of North Devon. *Trans. Devon. Assoc.* vol. vii. pp. 367–375.

Contains, first, an account of Anthracite in general, with remarks on its mode of occurrence in various districts; secondly, the literature of the North Devon beds; and, lastly, observations on their present condition, with notices of the chief localities where fossils are obtained, and a list of 26 species of plants which have been determined. T. M. H.

Hardman, Edward T. On some New Localities for Upper Boulder Clay in Ireland. *Journ. R. Geol. Soc. Ireland*, ser. 2, vol. iv. part ii. pp. 73–82, 2 plates, 6 woodcuts; and *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 76, 77.

Referring to Mr. J. Geikie's 'Great Ice Age,' which doubtfully admits the presence of the above division of the Drift in Ireland, the author gives details as to places where he has observed it in the counties Tyrone, Derry, Carlow, Queen's Co., and Kilkenny. Sections are given showing it resting on the Middle Gravels, and one near Kilkenny, which shows the three divisions of the Drift. E. T. H.

——. On two New Deposits of Human and other Bones discovered in the Cave of Dunmore, Co. Kilkenny. *Proc. R. Irish Acad.* vol. ii. ser. ii. (Science), no. 2, pp. 168–176, plate.

The author refers to the descriptions of previous writers, who agree that there is but one part in which bones occur. Lately he had found at the opposite end, and 600 feet distant, two places where human bones mingled with others occurred abundantly. The bones are found lying in or at the base of beds of stratified sand or clay, covered with stalagmite, which have been introduced by former openings, leading into old chambers or to the surface, the bones having been swept into their present position by water. The author controverts the idea that the bones could be those of natives massacred by the Danes, and considers that they were probably prehistoric. A list of the bones is given. The plate gives a sketch of a stalagmitic pillar 16 feet high and 6 to 10 feet in diameter. E. T. H.

——. On the Geological Structure of the Tyrone Coal-fields. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 77–79.

The Carboniferous rocks here somewhat resemble those of the N. of England. The limestone series is split up by sedimentary beds, limestone becoming less abundant northwards. The coal-bearing beds are true Coal Measures. The order and thickness of the several divisions are as follows:—Middle Coal Measures 930 feet; Lower Coal Measures 1000; Millstone Grit 200; Yoredale Shales 600; Upper Limestone, Calp, and Lower Limestone about 2000. There are from 22 to 24 coal-beds, at least 13 of which are workable. The southern coal-field, that of Dungannon, is bounded on the N. by a fault, with a downthrow of over 2000 feet. 3½ miles N. is the small Annaghone coal-field, let down by faults. At the close of the Carboniferous period the rocks were forced into a series of E. and W. folds; denudation followed, and the Permian and Triassic rocks were deposited on the denuded edges—sometimes on the Limestone, sometimes on the Coal Measures. Post-Triassic faults and subsequent denudation account for the present positions of the rocks. A list of fossils from the Coal Measures is given. W. T.

——. On the Age and Mode of Formation of Lough Neagh, Ireland. *Rep. Brit. Assoc.* for 1874, *Sections*, pp, 79–83.

The conclusions are as follows:—The lough is of an age between the

Lower Miocene and the Glacial periods. It is not a true rock-basin, and could not have been formed by ice-action, but is part of an area of depression, and is due to the existence of faults, assisted by subaërial denudation. The deposit of clay, sand, &c. found on the southern shore and for some miles inland is the delta of a former large river, which flowed very much in the same course that either the Upper Bann or the Blackwater does now. These clays are of much later date than the basalt; the silicified wood of the lough may be referred to the lignite-beds of the latter. By the help of these clays we learn that the main features of the country are newer than the basalt, but older than the Glacial epoch, and that the great denudation which has affected the N. of Ireland belongs to the same time. E. T. H.

Haviland, A. The Geographical Distribution of Heart Disease and Dropsy, Cancer in Females, and Phthisis in Females, in England and Wales. Fol. *Lond.* Pp. viii, 116; 9 coloured maps.

Contains notes on the soils, geology, and physical features of various districts, and notices the relation of these to the distribution of disease. W. T.

Hawkesley, T. Report upon the Boring for Water. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 71, 72. (Reprinted from *Rugby Advertiser* of 1862.)

The water rises from the waterstones of the New Red Sandstone, but is brackish. [A coloured section of the well was published in the Report for 1868.] Analysis of the water by **Dr. Odling** given. W. H. D.

Hawkshaw, J. C. The Construction of the Albert Dock at Kingston-upon-Hull. *Proc. Inst. Civ. Eng.* vol. xli. pp. 92–124, plates.

The nature of the strata is described on pp. 93, 94, and is illustrated by the Sections on Plate 8. The foreshore was covered with silt or warp, 30 feet thick in some places, but thinning out towards low-water line; below this was peat, 2 to 8 feet; then two beds of Boulder Clay separated by sand, the upper with, the lower without stones. The lower clay was separated from the Chalk by 16 feet of sand. This held water under considerable pressure, which frequently forced its way up through the higher beds in "boils" or "blow-wells;" these are described on pp. 98–109 and in the discussion. W. T.

Hesse, E. A. von. Der unterseeische Tunnel zwischen England und Frankreich vom geologischen, technischen und finanziellen Standpunkte beleuchtet. [The Channel Tunnel.] 8vo. *Leipzic.* Pp. 32, geol. map, sections, and plate.

Geological notes pp. 6–14. Map and sections reproduced from Topley, *Quart. Journ. Sci.* 1872.

Hicks, H. On the Succession of the Ancient Rocks in the vicinity of St. David's, Pembrokeshire, with special reference to those of the Arenig and Llandeilo Groups, and their Fossil Contents. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 167–195, pls. viii.–xi. (map and sections, fossils, and table of strata).

The ridge of altered rocks at St. David's is referred with doubt to the Laurentian. The Cambrian rest unconformably upon it; and from the lowest Cambrian upwards there is conformity. In ascending order the rocks are as follows:—*Longmynd* or *Harlech Group*: grits, purple and green sandstones, slates, and conglomerates, 4000 feet thick; some of the beds are so much altered as to have been described as Greenstone. *Menevian Group*: slates and flags, 600 feet; lithologically this and the preceding group are unlike, but palæontologically they are closely allied; together they form the *Lower Cambrian*. *Lingula-Flag Group*: sandstones, shales, and black slates, 2000 feet. In N. Wales the group is 5100 feet thick, and has 3 divisions:—*Tremadoc Rocks*: earthy slates and flaggy sandstones, nearly 1000 feet. The Lingula Flags and the Tremadocs form the Upper Cambrian, at the top and bottom of which there are palæontological breaks. The Lower Silurian consists of the following divisions:—Resting conformably on the Tremadocs is the *Arenig Group*, in 3 divisions: *Lower* (represented by the "Upper Tremadoc" in N. Wales), fine black slates and shales, 1000 feet, containing about 48 species of Graptolites: *Middle*, slates and flags, with thin bands of sandstone, 1500 feet; there are a few Graptolites in the lower beds, Trilobites &c. in the upper: *Upper*, resembling the Lower Arenigs, 1500 feet; a rich fauna has recently been discovered in this division, very like that of the Angers Slate in France, and Barrande's Etage D. 1 in Bohemia, hitherto unrecognized in Britain. *Llandeilo Group*, in 3 divisions:—*Lower*, black slates interstratified with volcanic tuff, 500 feet; a distinct fauna: *Middle*, black calcareous shales and flags, with limestone in the upper part, over 800 feet: *Upper*, black slates, flags, and flaggy sandstones, with interbedded traps, over 1000 feet. The Upper and Lower Llandeilo vary much in thickness, owing to the intercalated volcanic beds. The Lower Llandeilo occurs in N. Wales; but the existence of Middle and Upper Llandeilo is not yet proved there, though they probably occur. The author refers to the history of the rocks which he classes as Lower Silurian, and claims that Sedgwick's term of *Arenig* should be reintroduced, the beds described under that name being quite distinct from the Llandeilo beds of Llandeilo and Bluith. Lists of fossils are given, and the following new species are described, all from the Arenig Group of St. David's:—*Ampyx Salteri*, *Trinucleus Etheridgei*, *T. Ramsayi* (and Lower Llandeilo), *Illænus Hughesii*, *Illænopsis? acuticaudata*, *Æglina Boia*, *Æ. obtusicaudata*, *Barrandea Homfrayi*, *Placoparia cambriensis*, *Phacops llanvirnensis*, *Calymene Hopkinsoni*, *Dinobolus? Hicksii*, Davidson, *Ophileta*, sp., *Pleurotomaria llanvirnensis*, *Bellerophon llanvirnensis*, *Theca caereesiensis*, *T. Harknessi*, *Conularia llanvirnensis*, and *Orthoceras caereesiense*. W. T.

Hicks, H. On the Occurrence of Phosphates in the Cambrian Rocks. With an Appendix on the Chemical Analyses of the Rocks, by **W. H. Hudleston.** *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 368–385, woodcut section.

As the result of analyses the author states that certain beds in the

Cambrian series (Menevian, Middle Arenig, and Tremadoc) are tolerably rich in phosphate of lime, amounting to 10 p. c. in some cases. Those parts which contain much phosphate are also those which contain most Crustacea. The shells of Crustacea are always rich in phosphate of lime; those of the Trilobites seem to have been so likewise. The shell of *Paradoxides* contains from 40 to 50 p. c. of phosphate of lime. Beds which contain few Trilobites are poor in phosphate. From these facts the author infers that the phosphate of the Cambrian rocks was mainly produced by the Crustacea. The phosphatic rocks are sometimes traversed by trap dykes; it is then found that the phosphate has been removed from the rock and has become concentrated in the trap, especially near the edges of the dykes. Mr. Hudleston gives details of analyses of the rocks and of recent lobsters. The amount of phosphate in the Trilobite shell is much in excess of that in recent Crustacea; he infers that the excess is due to substitution. He discusses the removal of phosphate from the rock by trap dykes, and suggests that the phosphate may formerly have been more abundant in the dykes than now, as the trap is in an altered state. W. T.

Hicks, H. The Physical Conditions under which the Cambrian and Lower Silurian Rocks were probably deposited over the European Area. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 552–558, plate.

A pre-Cambrian continent extended over the area now occupied by Europe; the land was highest to the N.E., lowest to the S.W. During the Cambrian period (Longmynd to Tremadoc) this continent slowly sank; but dry land probably existed to the beginning of the Devonian period in the E. part. The S.W. part of this old continent was first submerged; but how far S.W. the continent extended is not known. The earliest deposits known are those in the British Isles and Spain; and here the series is most complete. As the land sank the sea spread further east, the earliest deposits in this direction being later in time than those of the west. The order of events is given in detail for the Welsh area. At the close of the L. Silurian period the sea-bottom was possibly raised above water in some places; this elevation seems to have occurred chiefly along the line of volcanic action. The author traces out the migration of the fauna, with reference to the theory of evolution. The earliest faunas were of lower forms than the later: this difference is most marked in the western areas; and here we find the greater number of genera, and the genera here show a greater number of stages of progression than they do in the eastern areas. The intermediate varieties did not reach so far east, just as other intermediate forms did not reach the European area at all. Only the stronger and more marked varieties, which we now know as species, were able to pass on. W. T.

Holt, James. The Millstone Grit, or that Stratification of Rock chiefly found in the Neighbourhood of Bolton. *Papers Land and Water Club, Bolton*, Sess. 1873–4 and 1874–5, pp. 54–59.

A popular account of the Millstone Grit.

Home, D. Milne-. On High Flood Marks on the Banks of the River Tweed and some of its Tributaries, and on Drift Deposits in the Tweed Valley. *Proc. R. Soc. Edin.* vol. viii. pp. 559–562.

1. Water-lines on the banks of the Tweed and some of its tributaries ; 2. Notice of Ancient Lakes and Drift Deposits ; 3. Theoretical Explanations suggested ; 4. Notice of the views of other persons. R. E., Jun.

Homer, Charles J. The North Staffordshire Coal Field, with the Ironstones contained therein. *Journ. Iron Steel Inst.* pp. 540–573, plates (continuous vertical section).

Gives details of borings near Alsager, at Lightwood (near Longton), and at Fenton (near Stoke-on-Trent). Notices the faults. Describes each workable seam of ironstone and coal, and gives analyses of some. The section shows 33 workable seams of coal and 13 of ironstone of an aggregate thickness of 130 and 24 feet respectively. W. W.

Hopewell, E. W. Two Sections of Wells [Newbold]. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 51, 52.

Depths 40 and 28½ feet, in Liassic rock and clay. Details given.

Horne, John. Post-Pliocene Formations of the Isle of Man. *Geol. Mag.* dec. 2, vol. ii. pp. 329–331.

Gives arguments in support of the view that the high-level Boulder Clay of the Isle of Man passes beneath the sands and gravels that cap the coast cliffs, and that the laminated clays, hitherto regarded as part of the Lower Boulder Clay, belong to a much higher horizon. J. G. G.

Hudleston, W. H. Excursion to Northamptonshire. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 123–134.

Special attention was given to the Lincolnshire Limestone, Northampton Sand, and Collyweston Slate. The Ironstone of the Northampton Sand is described as formed by the substitution of iron for lime in the original rock, the carbonate of iron having been afterwards chiefly changed into hydrated peroxide. W. T.

——. Excursions to the Isle of Thanet. *Proc. Geol. Assoc.* vol. iv. no. 4, pp. 254–260.

Mr. Dowker explained the structure of the district, noting the resemblance of the Chalk of Margate and Pegwell Bay to that of Norwich. The sections of Thanet Sand are described, and also the high gravels of E. Kent. W. T.

——. Excursion to Charnwood Forest, Leicestershire. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 307-317.

Gives the section at Lindridge Colliery, S.W. of Charnwood Forest, where coal has been found at 287 feet, under New Red. The syenites and slates of Charnwood Forest are noticed. The so-called Greenstone of Bardon Hill is a Felstone. Mr. Bonney regards it as the stump of a cone; he also states that the 'Porphyrite' of Greenhill is not igneous, but only extremely metamorphosed. **The ages of the Charnwood axis** and of the Charnwood rocks are discussed. W. T.

Hudleston, W. H. Excursion to the Site of the new **Museum** of Natural History, South Kensington. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 324-326.

Notes on the section of gravel 20 feet thick.

——. Excursion to East Yorkshire. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 326-336.

The most important points described are:—The Kelloway Rock and Cornbrash of Newtondale, and the U. Lias and Oolites of the coast-section. W. T.

Hudleston, W. H., and James Parker. Excursion to Oxford. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 91-97.

Gives notes of a lecture on the district by Prof. Phillips, and describes the Oolites of Charlbury and Stonesfield.

Hull, [Prof.] E. Boulder-Clay in Ireland. *Geol. Mag.* dec. 2, vol. ii. p. 524.

Considers that there is an Upper Boulder Clay in Ireland resting on Sands and Gravels, and these again on Lower Boulder Clay; the Esker Drift is newer than these, and is only a remodelled form of the true Drift beds. J. G. G.

——. Address to the Geological Section. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 67-73.

Gives an account of the volcanic district of the N.E. of Ireland (see Geological Record for 1874, p. 21).

Hull, Prof. E., J. R. Dakyns, R. H. Tiddeman, J. C. Ward, W. Gunn, and **C. E. DeRance.** The Geology of the Burnley Coalfield and of the Country around Clitheroe, Blackburn, Preston, Chorley, Haslingden, and Todmorden. [Edited by R. H. Tiddeman.] Table of Fossils by **R. Etheridge.** *Geological Survey Memoir*, pp. 225 [should be xi, 221], 42 woodcuts, 8vo. *London.*

Chap. i. Physical Geography, in 4 areas, pp. 5-13.—ii. Rocks below the Coal Measures (Carboniferous Limestone, Yoredale Beds, Millstone Grit), 13-52.—iii. The Burnley Coal-field (L. and M. Coal Measures, Faults), 53-89.—iv. The Chorley Coal-field, 90-98.—v. Country east of the Anticlinal Fault (Yoredale Beds, Millstone Grit), 98-120.—vi. Permian, 120-122.—vii. Trias, 122-128.—viii, ix. Glacial and Post-glacial Drift, 128-168.—x. Relative ages of Pendle and Penine Chains, 169-171.—xi. Igneous Rocks, 171, 172.—xii. Minerals, &c., 172-175.—Appendices, Lists of Fossils, 176-187.—List of Works on the Geology of Lancashire, 188-218. W. W.

Irving, Rev. A. On the Geology of the Nottingham District. *Proc. Geol. Assoc.* vol. iv. no. 1, pp. 45-90.

Coal Measures. There are seven seams of good Coal in the district, besides others of inferior quality. Unproductive Gannister Beds come below. The Coal is worked beneath the Trias; and many exploring borings are in progress.—*Permian.* The Lower Red Sandstone is absent; and the Permians lie unconformably on the Coal Measures. To the south they disappear, and the Coal Measures underlie the Bunter.—*Bunter.* There is no break between this and the Permian; and the author suggests that these two should go together as "one great transition series." The Lower Mottled Sandstone is only 100 feet thick; this generally passes up into the Pebble Beds (Middle Bunter); but occasionally there is a small local unconformity. The Pebble Beds contain masses of Millstone Grit and Yoredale Sandstone. There are some small patches of Upper Red and Mottled Sandstone.—*Keuper* (200 feet thick). The Lower Keuper or Waterstones rest unconformably on the Bunter; at Blue-bell Hill, close to Nottingham, they contain thin layers of ochreous yellow Limestone; footprints of *Cheirotherium*, sun-cracks, &c. are mentioned from other localities. The Upper Keuper is more marly than the Lower; there is little sandstone, but much gypsum. The long prismatic crystals of fibrous gypsum have a marked tendency towards the vertical. Alabaster is largely quarried.—*Rhætic Beds* are noticed at Elton and near Leicester. The Lias is briefly mentioned; and there are remarks on the *Drift* and *Alluvium.*

The Castle Rock, Nottingham, is traversed by a series of northwesterly "master-joints." "The valleys formed by the erosion of this rock, and opening upon the Trent valley, appear to have had their direction determined by these joints, which, as lines of weakness, must have facilitated denudation." A fault at Cinder Hill Colliery, Basford, is described; in traversing Coal Measures it has a throw of 88 yards, but in the overlying Permian and Bunter Rocks the throw is only 30 feet. The whole fault is therefore the result of two separate movements—the first and greatest pre-Permian, the second subsequent to the deposition of the Lower Bunter. W. T.

Jack, Robert L. Notes on a Till or Boulder Clay with Broken Shells, in the Lower Valley of the River Endrick, near Loch Lomond, and its Relation to certain other Glacial Deposits. *Trans. Geol. Soc. Glasg.* vol. v. pt. i. pp. 5-25, 2 figs. in text.

The beds described are, in ascending order:—*a.* Stratified Clay (Croftamie), with marine shells and reindeer's horn: Inter- or Pre-glacial. *b.* Shelly Till, with broken shells, traceable to 320 feet above sea-level, believed to be the *moraine profonde* of a large glacier or ice-sheet: referable to later stages of first period of Glacial Epoch, prior to great submergence of land. *c.* Great extent and thickness of stratified mud, clay, sand, and gravel, reaching 262 feet above the sea-level, with worn marine shells chiefly of recent British species: referred to later stages of the great submergence period. G. A. L.

James, Richard. Note on a Granite Block at Halamanning. *Trans. R. Geol. Soc. Cornwall,* vol. ix. pt. i. pp. 101, 102.

The object is to record the fact of a large block of granite having been found in the killas of Halamanning mines, situated 1¼ mile from any granitic outcrop. C. L. N. F.

Jeffreys, J. G. Note on the so-called Crag of Bridlington. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 83–87.

Gives a list of 67 species of Mollusca, all high northern forms and now living. Suggests that this deposit might have originated in a deviation of the great Arctic current at a remote period, or in glacial conditions. It has no relation to the Norwich Crag. Certain littoral shells formerly referred to the Bridlington Beds are rejected, as having probably come from the Boulder Clay which overlies it. W. T.

Jenkinson, H. I. Practical Guide to Carlisle, Gilsland, Roman Wall, and Neighbourhood. 8vo. *London.*

Geology, pp. 225–240. Mineralogy by **B. M. Wright**, pp. 241–263, with a descriptive list of the minerals of the district, and lists of Metalliferous Mines of the Gilsland District, situated at or around Alston Moor, and of the Collieries. W. W.

——. Practical Guide to the English Lake District. Ed. 4. 8vo. *London.* (Ed. 3 in 1874.)

Geology, with Map, pp. xli–lxii. Mineralogy by **B. M. Wright**, pp. lxxi–xciii, with a List of the Minerals and Produce of the Mines.

Jolly, W. Third Report of the Committee appointed for the purpose of collecting Fossils from localities of difficult access in North-western Scotland. *Rep. Brit. Assoc.* for 1874, pp. 74, 75.

No fresh collections have been made during the past year.

Jones, Prof. T. R. Notes on some Sarsden Stones. *Geol. Mag.* dec. 2, vol. ii. pp. 588, 589.

The Sarsden Stone which occurs in place in the Reading Beds at Langley Park, near Newbury, is composed of quartz grains with a calcareous cement. In a Sarsden Stone of the Bagshot Series from gravel at Frimley, Surrey, there are indications of vertical rootlets; this may explain the pittings which are seen on many weathered blocks of this stone. W. T.

Jones, Prof. T. R., and C. C. King. On some newly exposed Sections of the "Woolwich and Reading Beds" at Reading, Berks. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 451–457, plate xxii. (sections).

Compare the section of the lowest Tertiary beds lately exposed at Coley Hill with other sections in the neighbourhood. At one point the leaf-bearing blue clays are absent, but are continued by thin irregular seams of derived clay and clay-galls, with broken lignite, occasional grey flints, &c. At another point, where the blue clay still exists, large lumps of clay, rolled and often enclosing subangular flints, lie in the sand over the leaf-bed. Some of these clay-galls have passed into concentric nodules of ochre and limonite. The probable derivation of the clay-galls is from pre-existing clay-beds (probably the blue shale) by the action of varying currents in an estuary at different levels. The direction of the currents wearing away the clay bands and depositing the galls and sand is suggested; and these observations are offered as further materials in working out the hydrography and history of the Lower Tertiaries. T. R. J.

Judd, John W. On the Structure and Age of Arthur's Seat, Edinburgh. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 131–148, 4 woodcuts (sections).

It has usually been supposed that the peculiar features of this hill can only be explained by the hypothesis that *two series* of volcanic eruptions, widely separated in time, had occurred upon the same site. A re-examination of the evidence, however, shows that all the phenomena can be accounted for by *a single series* of volcanic outbursts, during the period of the formation of the *Lower Carboniferous* (Calciferous Sandstone) in Scotland. The relation of the outbursts of volcanic violence, which produced Arthur's Seat, to the contemporary eruptions in the Central valley of Scotland is described. J. W. J.

——. The Geology of Rutland and the Parts of Lincoln, Leicester, Northampton, Huntingdon, and Cambridge included in Sheet 64 of the one-inch Map of the Geological Survey; with an Introductory Essay on the Classification and Correlation of the Midland District of England. Appendix, with Tables of Fossils, by **R. Etheridge.** Pp. xv, 320, 11 plates (sections and views), 19 woodcuts. *Geological Survey Memoir.* 8vo. *London.*

The Introductory Essay "On the Classification of the Jurassic Strata of the Midland District and their Correlation with those of the Cotteswold Hills and the North-east of Yorkshire," takes up pp. 1–52.—Chap. i. Physical Features, 53-56.—ii.-iv. U., M. and L. Lias, 57–89.—v. L. Oolites, 90–112.—vi. Origin of the Northampton Sand (General Features, Lithological, Microscopical, and Chemical characters, Mode of Formation, Causes of Redistribution of the Iron), 113–138.—vii. Lincolnshire Limestone and Collyweston Slate (Notices of the building-stones, and Origin of the Oolitic Structure), 139–185.—viii. Gt. Oolite (The Estuarine Series, Limestones, Clays, Cornbrash), 186–231.—ix. M. Oolites, 232–239.—x. Post Tertiary Deposits (Pre-Glacial, Glacial, Post-Glacial), 240–253.—xi. Position and Disturbances of the Strata, 254–259.—xii. Miscellaneous (Denudation, Scenery, Springs, &c.), 260–271.—Appendices: i. Lists of fossils, 273–292. (There are many local lists throughout the book.) ii. Bibliography of the District, 293–301. W. W.

Jukes-Browne, A. J. On the Relations of the Cambridge Gault and Greensand. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 256–316, pls. xiv, xv (fossils), 5 woodcuts (map and sections).

Regards the Cambridge Greensand as the base of the Chalk-Marl, it having been formed from the erosion of the Gault by marine currents. Where the "Greensand" bed exists the true Upper Greensand is absent and the Gault is incomplete. Traces the beds through Cambridge, Beds., and Bucks., and shows that in passing from Cambridge S.W. the Upper Gault first appears near Barton, the true Upper Greensand near Tring. The Gault is only from 103 to 120 feet thick near Cambridge; it gradually thickens, W., and is from 204 to 214 feet near Arlesey and Hitchin; this increase is chiefly due to the incoming of higher beds westwards. At Folkestone the Upper Gault is succeeded by Upper Greensand. At Aylesford the true Upper Greensand is absent, and the Upper Gault had been partially denuded before the deposition of the Chalk Marl; at the base of this there is a phosphate-bed derived from the denuded beds. The fossils of the Cambridge Greensand are divided into two series:—1, those proper to the deposit; 2, those derived from other formations. The number of invertebrate species is 254; 210 of these are derived, and their chief affinity is with those of the Upper Gault. The paper contains lists and tables of fossils, and concludes with remarks on some of the species. W. T.

Keeping, W. On the Occurrence of Neocomian Sands with Phosphatic Nodules at Brickhill, Bedfordshire. *Geol. Mag.* dec. 2, vol. ii. pp. 372–375.

Sand with scattered nodules (30 ft.) rests on Oxford Clay. 20 species, proper to the deposit, are named; of these, 14 occur at Upware, 12 at Farringdon, and 7 in all three places. Sponges are rare. The derived fossils are chiefly from the Kimmeridge Clay. W. T.

Kempthorne, P. H. The Cave Men. *5th Ann. Rep. Wellington Coll. Nat. Sci. Soc.* pp. 45, 46.

Note of Kent's Cavern.

Kerr, James. On Lead Mining in the districts of Stansfield, Holmes Chapel, Rossendale, and Great Hambledon, N.W. Yorkshire and N.E. Lancashire. *Trans. Manch. Geol. Soc.* vol. xiii. pp. 344–360.

Adds further details to those given by Mr. DeRance (*Geol. Mag.* 1873) as to the locality, methods, and dates of working the various mines, which appear to have commenced in 1753, and to have been given up through poverty of the lodes. C. E. DeR.

Ketley, C. The Search for Coal under the "Red Rocks" of the South Staffordshire Coal Field. *Geol. Mag.* dec. 2, vol. ii. pp. 193–198.

Recent researches have shown that much of the "Red Rock" hitherto classed as Permian belongs to the Coal Measures; the author doubts whether any of the beds passed through at Sandwell Park are Permian. The highest beds of coal here found seem to be new. This pit is sunk at a spot where the Coal Measures were supposed to be absent, and the Permian to rest on beds below the coal, probably on Silurian rocks. W. T.

Kinahan, G. H. The Estuary of the River Slaney, Co. Wexford. *Journ. R. Geol. Soc. Ireland*, ser. 2, vol. iv. part ii. pp. 60–69, with woodcut.

The Drift of the locality consists of several systems formed at different periods and at corresponding levels. The older rocks are broken up by faults of all ages from Cambro-Silurian to Post-Glacial. The estuary seems to have been excavated almost entirely in Drifts of the "Esker" and "100 feet sea" periods, and in part during the time of the "25 feet" beach, and subsequently. Originally it was deeper than now. In the interval various changes of level of sea and land have occurred, evidences of which may be seen in various places, as in the estuary itself, where an excavation has proved a bed of peat under 16 feet of mud; the same substance also occurs on the coast below high water mark. Although the estuary is excavated out of recent Drifts, it is apparent that older valleys occupied the same site. These valleys are supposed to have run along lines of fault, chiefly post-Carboniferous. The physical geology of the district during successive Drift epochs is noticed. E. T. H.

——. Mr. Birds on the Irish Glacial Drifts. *Geol. Mag.* dec. 2, vol. ii. pp. 189, 190.

Points out that Mr. Birds is mistaken in supposing that an Upper Glacial Drift has been proved to exist in the East of Ireland. What has been taken to be Glacial Drift is often distinctly stratified, or it has been shifted from its original position in various ways, and it cannot, therefore, be regarded as normal Glacial Drift. J. G. G.

——. Red Rocks of Tyrone and Derry Counties. *Geol. Mag.* dec. 2, vol. ii. p. 287.

These have been classed as Old Red and as Carboniferous; they are now generally regarded as Permian. The author believes that they are Carboniferous; he suggests that the fossils, supposed to be of Permian type, are Carboniferous, but stunted from the presence of iron. W. T.

——. The Erroneous Nomenclature of the Drift. *Geol. Mag.* dec. 2, vol. ii. pp. 328, 329.

Drifts to be entitled to be called Glacial Drifts must have been deposited direct from ice. Asks how any drift deposited in the sea or re-sorted by water can be called glacial. If any other definition is allowed, various other deposits may be included under the term at the caprice of the writer. J. G. G.

——. Nomenclature of the Drift. *Geol. Mag.* dec. 2, vol. ii. pp. 547, 548.

Irish Gravels can be grouped according to their height above the present level of the sea. No Boulder Clay is seen to overlie any of the gravels that occur below the 350 feet contour, although such a deposit does overlie the higher gravels. Thinks an examination of the fossils that occur throughout the gravels would tend to show that they are of different ages. J. G. G.

Kinahan, G. H. Boulder Clay in Ireland. *Geol. Mag.* dec. 2, vol. ii. pp. 568, 569.

No Boulder Clay rests on the Middle Sands and Gravels in Ireland; where sand occurs below a Boulder Clay it is of an age prior to the accumulation of the Glacial Drift of that country. J. G. G.

Langtry, G. On the Occurrence of the Middle Lias at Ballycastle. *Rep. Brit. Assoc.* for 1874, *Sections*, p. 88.

The Middle Lias here only occurs in blocks; it has never been seen in place; hence the blocks may be transported. The author, however, thinks this is not the case. Notes of fossils are given. W. T.

Lebour, G. A. On the Limits of the Yoredale Series in the North of England. *Geol. Mag.* dec. 2, vol. ii. pp. 539–544.

The term Yoredale Rocks is generally applied to a series of beds lying between the Millstone Grit and the Scar Limestone Series, the dividing line being a bed of basalt known as the Whin Sill. The author shows that this is an intrusive bed, lying at various horizons, and therefore that it is worthless as a boundary-line. There is no natural division between the Yoredales and the beds below; nor can any line, which may serve as such, be traced through the country. It is suggested that all the Carboniferous Rocks between the Millstone Grit and the Tuedian or Calciferous Sandstone Series should be classed together under the term "Bernician Series." W. T.

——. On the "Little Limestone" and its accompanying Coal in South Northumberland. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 73–83, 2 plates (sections).

The "Little Limestone" is a very constant bed, and is known to extend from Alston to the Coquetdale. This and other limestones bear so constant a relation to certain beds of coal that they are known to the miners as "guiding limestones." The "Fell-top" is the highest bed of limestone in the series; between this and the "Little Limestone" there are about 330 feet of strata at Alston, there being here no intermediate bed of limestone; but in the Matfen district there are about 1450 feet of intermediate strata, with 3 or more beds of limestone. In the district described there is usually a great series of sandstone beds, often coarse and pebbly, below which comes a thin bed of shale and then the "Little Limestone," 9 to 18 feet thick. Below the limestone there is a variable thickness of shale or "grey beds" (2 to 45 feet thick); and then comes the coal. The seam is sometimes split up into 2 or even 3 beds. Concludes with a brief account of the range and outcrop of the strata described. W. T.

——. On the "Great" and "Four-Fathom" Limestones and their associated Beds in South Northumberland. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 133-150, 2 plates.

A continuation of the foregoing, and describes a strip of country lying between Haltwhistle and Elf Hills. The Great Limestone, 63 feet thick in the Alston district, is here reduced to from 30 to 40 feet.

Below this comes shale (with occasional thin coal), then a bed of sandstone, the Quarry Hazle or the Prudham Stone; below this is the Four-fathom Limestone. This last is everywhere characterized by the presence of *Saccamina Carteri.* The relation of the Whin Sill to the strata is noticed, and a list of fossils found in the limestones is given.
W. T.

Lobley, J. L. Excursion to Tilburstow and Nutfield. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 153, 154.

——. Excursion to the Cheltenham District. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 167–174.

Describes the Physical Geography of the Severn Valley, the Cotteswolds, May Hill, Garden Cliff, Tewkesbury, and Stroud.

——. Excursion to Erith and Crayford. *Proc. Geol. Assoc.* vol. iv. no. 5, p. 323.

——. The Cretaceous Rocks of England. *Trans. Watford Nat. Hist. Soc.* vol. i. pt. i. pp. 1–13, 5 woodcuts.

Treats of the general distribution of the Cretaceous rocks, and shows by means of a map the relations which the South Downs, North Downs, and Chiltern Hills bear to one another. It is pointed out how the Wealden beds suggest a distribution of land and sea very different from that which now obtains. The L. Greensand, Gault, and U. Greensand are each commented upon. The Chalk is then considered, its physical features indicated, its structure and origin described, and lastly the relation it bears to the higher beds of the London Basin, and the position of Watford in that Basin, shown in a section from Tring to the Weald.
A. J. J-B.

Mackintosh, D. On some important Facts connected with the Boulders and Drifts of the Eden Valley, and their Bearing on the Theory of a Melting Ice-Sheet charged throughout with Rock-fragments. (Abstract.) *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 692, 693.

Calls attention to the distribution of boulders in the district. Boulders of Criffell granite are limited to a few hundred feet above the sea-level on the N. and W. borders of the lake-district mountains. Shapfell granite does not reach above 1500 feet (?) on Stainmoor. These facts are inconsistent with the theory of an ice-sheet 2300 feet thick. The Eskers show traces of having been piled up rather than thrown down. There is evidence that existing ice-sheets are pure, and do not contain such a mass of material as the old ice-sheet is supposed to have dropped.
W. T.

Maddock, Rev. H. E. Changes in the Coast-line, especially between Beachy Head and Hastings. *Papers Eastbourne Nat. Hist. Soc.* 1874–5.

Notes the action of the sea on the various rocks, and describes, from the evidence of documents, certain changes of the alluvial flat of Pevensey Level and the shingle beach of Langley Point. W. T.

Mello, Rev. J. M. On some Bone-Caves in Creswell Crags. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 679–683, four woodcuts. (Appendix by **Prof. Busk**, see *post*, Vertebrate Palæontology.)

The fissures are in Lower Permian Limestone on the N.E. border of Derbyshire. The chief fissure, known as "Pin-hole," is described. It runs 40 or 50 yards into the hill-side. Below the surface soil in the cavern, which contains recent pottery and bones, there is about 3 feet of red sand, with blocks of limestone and pebbles. Bones were found throughout this bed, but were especially abundant at the bottom. Below this comes sand, sometimes cemented into a solid mass. No bones have been found here; the bottom of the fissure has not been reached. The cave has probably been a hyæna-den; but the bones seem to have been rearranged by water. The bones include parts of Hyæna, Rhinoceros, Elephas, &c.; many have been gnawed by Hyænas. There is a barrier of rock about 40 yards from the entrance; very few bones have been found beyond this, which makes it unlikely that they were carried into the fissure from behind. W. T.

Molyneux, William. The Trentham Gravel Beds. *N. Staff. Field Club Papers*, pp. 103–110.

The section in Trentham Park is in the middle or conglomerate division of the New Red Sandstone, and shows about 100 feet of coarse consolidated gravel, with bands of pebbly sandstone. The pebbles of this gravel are waterworn and rounded, and they consist of a variety of siliceous rocks, syenite, limestone, &c. On most pebbles there are curious spots, believed to have been caused by pressure or grinding action. W. W.

——. A Visit to Cannock Chase. *Coll. Guard.* vol. xxix. pp. 773, 774. [From the *Staffordshire Advertiser.*]

Address on the Geology of the Cannock Chase Coal-field, delivered at an excursion of the North Staffordshire Naturalists' Field Club.

Montgomery, R. A. On the Isle of Unst. *Trans. Clifton Coll. Sci. Soc.* vol. ii. pt. i. pp. 83–102, 2 plates (maps) and 1 section.

A sketch of the physical features of this, the most northern of the Shetland Islands, and of the relations of these to its geological structure, is followed by a description of the several rock-masses which compose it. These are gneiss, mica-, talc-, and chlorite-schists, crystalline limestone, and serpentine rock with euphotide. The limestone runs in a narrow band about halfway along the island, dipping E.S.E. 60° to 70°. No fossils have been round in it. An account of the distribution of the minerals of the island is given. The paper concludes with botanical, zoological, and archæological notices, and some notes of excursions. The plates are:—a coloured geological map, a map "showing the position of certain minerals," and a section across the island from E. to W. J. W. J.

Morris, Prof. J. Lecture on the Geology of Croydon, in relation to the Geology of the London Basin and other localities. 8vo. *Croydon.* Pp. 27, geol. map and 4 woodcuts.

The formations noticed are:—Chalk, Thanet Sands, Woolwich and Reading Beds, London Clay, Valley Gravels. The fauna of the Chalk is described, and compared with that of modern deep seas. Amongst other points specially noticed are:—the boulders in the Chalk, the fauna and fossil fruits of the London Clay. There is a table of strata showing those present or absent near Croydon, and their equivalents elsewhere. The appendix contains a note on the Croydon Bourne and sections of the Croydon Wells. W. T.

Morris, Prof. J. On the Occurrence of Boring Mollusca in the Oolitic Rocks. *Geol. Mag.* dec. 2, vol. ii. pp. 267–272.

Describes a quarry of the Forest Marble near Cirencester: the perforations occur in nodules of claystone, which also show attached *Ostrea*, *Serpula*, and *Polyzoa*. The nodules are bored all round, and have evidently been moved about since; the overlying rocks are false-bedded. References to and extracts from publications in which similar appearances have been noticed in the Oolites of England and France are given, and remarks are made on the false-bedding. W. T.

Mortimer, R. An Account of a Well-section in the Chalk at the north end of Driffield, East Yorkshire. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 111, 112.

The Chalk was traversed by vertical partings, the sides of which showed horizontal striæ. Interstratified with the Chalk were thin layers of Fuller's earth, which the author regards as caused by temporary disturbances of the water interrupting the ordinary quiet organic "secretion" of the Chalk. Analyses of the Chalk and Fuller's earth (by **T. Hodgson**) are given. W. T.

Nahanik [= **G. H. Kinahan**]. Irish Salmon Rivers and their Geology—the Suir, the Barrow, and the Nore. *Land and Water*, Jan. 9.

The valleys of the rivers are described, and also the geology of the country they pass through. The rivers all rise near together in the centre of Ireland, and, after draining different areas, join into one before reaching the sea at Hook Head. All the valleys run across the strike of the rocks; and therefore rapids and falls might be expected, especially while crossing the L. Silurian rocks of Waterford and Wexford, in which are many interstratified felstones, eurytes, whinstone, and other hard rocks. This, however, is not the case, as the rivers run in fissures due to recent faults and shrinkage-fissures in the underlying strata. The valleys are low seated, the Suir being tidal for 37 miles, the Barrow for 32 miles, and the Nore for 31 miles, respectively, from Hook Head. G. H. K.

Newall, —. Note on a Well at Clifton Vicarage. *Rep. Rugby School Nat. Hist. Soc.* for 1874, p. 51.

Nicolson, A. The Isle of Skye. *Good Words*, vol. xvi. pp. 344–350, 384–392, 457–462, 561–568.

Contains some geological notes.

Oldham, R. D. Subwealden Explorations. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 17–24.

States arguments for the subaërial denudation of the Weald, and the evidence as to the depth of the Palæozoic surface. Describes the Netherfield boring, giving a list of 34 fossils from the Kimmeridge Clay in it. W. H. D.

——. Geological Expedition to the Wyken Colliery, near Coventry. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 26, 27.

The surface is New Red Sandstone. The Coal Measures dip mostly W. at 1 in 3. Ironstone and two coal-seams are worked. A rolled pebble of quartzite occurred in the coal. W. H. D.

[**Oldham, R. D.**] A Section exposed on the Lawford Road. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 52, 53, plate 7.

Illustrates the relations of the Drifts.

Ormerod, G. W. On the Murchisonite Beds of the Estuary of the Exe, and an attempt to classify the Beds of the Trias thereby. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 346–354 (plate of section).

After mentioning the characters of Murchisonite (a variety of felspar), describes the coast-section from Littleham Bay to Maidencombe, near Torquay. The beds seem to belong to the lower portion of the Trias, and consist of sandstones, breccias, and conglomerates. At certain horizons in them the author has detected the presence of Murchisonite, which really occurs in the form of derived fragments or pebbles; and he endeavours to trace inland, by the aid of this mineral, the several beds which they characterize on the coast. H. B. W.

Parfitt, E. On the Drift Gravels on the Cliffs of the South Coast of Devon. *Trans. Devon Assoc.* vol. vii. pp. 162–170 (2 sections).

Principally devoted to an examination of Mr. Godwin-Austen's paper in *Trans. Geol. Soc.* ser. 2, vol. vi. p. 446.

Peach, C. W. On Traces of Glacial Action on the Great Cairn near Gorran Haven. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. i. pp. 105–108.

States that the polishing of the blocks of quartz-rock is due to glacial action.

Pengelly, W. Tenth Report of the Committee for Exploring Kent's Cavern, Devonshire. *Rep. Brit. Assoc.* for 1874, pp. 1–17.

Describes work done in various parts of the cave. Gives a full description of the Inscribed Boss of Stalagmite, the dates on which go back as far as 1615. Detailed information is given regarding the Long Arcade (see GEOLOGICAL RECORD for 1874, p. 29), and of the bones and implements found there. Only bones and teeth of the *bear* have as yet been found in the breccia, the oldest deposit; but many flint and chert implements occur here. This is generally separated by crystalline stalagmite from the cave-earth, in which remains of Hyæna are abundant; over this lies the granular stalagmite. Human bones have been found on and in the *granular* stalagmite in Underhay's Gallery; but these are comparatively recent. In this gallery the cave-earth generally rests on the breccia, the crystalline stalagmite occurring only in patches on the wall; but *in* the breccia there are fragments of a still older stalagmitic floor. In the inner part of Clinnick's gallery the cave-earth thins out, and the two stalagmitic floors come together. Descriptions of various implements are given, especially of two fine ones found in the breccia. Concludes with a table showing the percentage distribution of various teeth in the several divisions of the cavern. W. T.

Pengelly, W. Notes on Boulders and Scratched Stones in South Devon. *Trans. Devon. Assoc.* vol. vii. pp. 154–161.

Describes, first, a series of large boulders of New Red Sandstone at Waddeton Court, about 4 miles N. of Dartmouth, and suggests that they were transported by ice from some locality between Berry Head and Glampton Common; secondly, blocks of trap at Great Englebourne, 3 miles S.W. of Totnes, which have grooves or scratchings on them, posssibly indicating glacial action; in each case the boulders rest upon slate. T. M. H.

——. Notes on a Tooth of *Machairodus latidens* in the Albert Memorial Museum, Exeter. *Trans. Devon. Assoc.* vol. vii. pp. 247–260.

This tooth was purchased at the sale of the Rev. J. MacEnery's collection. The author brings forward evidence to show the probability of its having been found in the early explorations of Kent's Cavern. T. M. H.

——. Notes on Recent Notices of the Geology and Palæontology of Devonshire. *Trans. Devon. Assoc.* vol. vii. pp. 279–324.

An examination of notices which had appeared during the preceding 12 months:—on Brixham Cavern, by Edward Clodd, in the 'Childhood of the World;' and on Kent's Cavern in *Pop. Sci. Rev.* Oct. 1874, and in Dr. J. W. Dawson's 'Story of the Earth and Man.' T. M. H.

Pennington, Rooke. On the Bone-Caves in the neighbourhood of Castleton, Derbyshire. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 238-245, 2 woodcuts. [For notes on the Bones, see **Dawkins**, *post.*]

The *Prehistoric Caves* examined are those of Cave Dale and Gelly or Hartle Dale; the former seem to have been inhabited by man from Neolithic times downwards. The *Pleistocene Caves* and *Fissures* are those in Gelly Dale and Windy Knoll. The fissure at Windy Knoll is described in detail, with notes on the physical geography of the district. That at Gelly Dale communicates with a hollow in the limestone, into which bones of bison, deer, wolf, bear, &c. had been washed. The material filling the hollow is subaërial débris, not Glacial Drift. Concludes with a notice of a fissure at Waterhouses, in Staffordshire. W. T.

Phillips, J. A. The Rocks of the Mining District of Cornwall, and their Relation to Metalliferous Deposits. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 319–345, pl. xvi. (microscopic structure of rocks).

The Killas is of Devonian or Carboniferous age, with the exception of some in the S.W., which is probably Silurian. The Granite is post-Carboniferous. Interbedded with the Killas at Trelill, St. Kew, there is a mass of altered doleritic lava. Trap-dykes traverse the Killas in different parts; but many of the rocks which have been mapped as 'greenstones' are shown to be altered hornblendic slates. The Granite is usually coarse-grained; but near the Killas it becomes finer, and it frequently sends off veins into the adjoining slates. Coarse-grained granites are sometimes traversed by granitic veins of a finer texture. The felspar is mostly orthoclase; but a plagioclastic species, supposed to be albite, is frequently present. The mica is sometimes replaced by a talc-like mineral. Schorl is almost invariably present. The dykes of Elvan traverse slate and granite alike; but they are most numerous in the latter. The elvans have the same ultimate composition as the granite; but the aggregation of their constituents is different. The author doubts whether the fluid cavities of the crystals in the granites and elvans yield information that can be relied upon as to the temperature at which the crystals were formed. He shows, from a number of analyses, that the granite cannot be regarded as extremely metamorphosed killas. The paper concludes with a discussion of the origin of mineral lodes. The granite being post-Carboniferous, and the elvans subsequent to the granite, it is shown that the vein-fissures are later than either. These fissures were subsequently filled by chemical action, from heated water and aqueous vapours circulating through them, lateral infiltration greatly influencing the results. Contact-deposits, stockwerks, and the alteration of stratified deposits near eruptive rocks are probably due to analogous chemical action. W. T.

Prestwich, Prof. J. Notes on the Phenomena of the Quaternary Period in the Isle of Portland and around Weymouth. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 29–54, plate i. (map and sections). 8 woodcuts (sections and fossils).

The oldest Drift of the district is that represented by the patch of mammaliferous gravel near the Portland Prison; this contains *Elephas antiquus*, and is partly composed of pebbles derived from the Greensands and Tertiaries on the N. The author believes that this gravel was deposited when there was a continuous slope of land from the Ridgeway to Portland, and before the anticlinal which has elevated the strata of the intermediate area was formed; the Ridgeway fault is of older date. The raised beach of Portland Bill is mainly composed of flints, but it contains other pebbles of local origin as well as some which have travelled from the W. Overlying the beach there are deposits of sand, loam, and angular rock-débris. The beach is of old date; but the overlying beds are subsequent to the anticlinal. The author thinks that these later beds were formed during a depression of the land, when the whole of Portland was under water. There are notes on other Drift deposits in the district. One of these, near the summit of Blackdown (over 700 feet above the sea), is probably older than the mammaliferous Drift of Portland, and may belong to some part of the Glacial period. There are notes on the shells of the Drift by **Mr. J. Gwyn Jeffreys**, and on the bones by **Prof. Busk.** W. T.

Price, F. G. H. On the Lower Greensand and Gault of Folkestone. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 135–150.

The Hythe Beds are briefly mentioned. The Sandgate Beds (80 ft.) are divided into 4, the lowest of which is the zone of *Rhynchonella sulcata.* The Folkestone Beds (70 ft.) are in four divisions:—1 (lowest), thin, and with phosphatic nodules; 2, clayey sandstone, 2 ft.; 3, 60 ft. of calcareous sandstone and sand; the highest is the zone of *Ammonites mammillaris*, it contains masses of grit and phosphatic nodules. The Gault is divided into 11 zones. Descriptions and lists of fossils of these are given. (See Geological Record for 1874, p. 31.) W. T.

——. On the Probable Depth of the Gault Sea. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 269–278.

From an examination of its Mollusca, the author concludes that the Gault of Folkestone was deposited in an area which sank more rapidly than the sediment accumulated, so that the sea was constantly deepening. The lowest bed contains littoral and rolled shells; the maximum depth of the clayey Lower Gault sea was probably much under 100 fathoms; the Upper Gault is marly, and appears to have been deposited in a deeper sea. W. T.

Reade, T. M. The Glacial and Post-Glacial Deposits of Garston and the surrounding District, with Remarks on the Structure of the Boulder Clay. *Proc. Liverpool Geol. Soc.* vol. iii. part 1, pp. 19–27.

Resting on a floor of Bunter Beds is red sand, with embedded masses of rubble, which the author terms "Ground Moraine," and believes to be the equivalent of the Scotch Till. Resting on it is the "Low Level Marine Boulder Clay and Sands," reaching a maximum depth of 169 feet below the surface, and due to tidal sorting. C. E. DeR.

Roberts, Isaac. President's Address. *Proc. Liverpool Geol. Soc.* vol. iii. part 1, pp. 3–18.

Describes the Glacial Drifts as representing long successive intervals of time and conditions of climate during the period of their deposition. No marine organisms occur in the true Till, which is crowded with local fragments of rock; while the overlying Boulder Clay, which is more or less distinctly bedded, contains marine shells and erratic scratched pebbles, generally rounded, and rises to a height of from 200 to 260 feet above the sea in the Liverpool district. C. E. DeR.

Robson, Dr. J. S. Anniversary Address. *Proc. Berwick. Nat. Club*, vol. vii. no. 2, p. 163.

Notes on the glacial geology of Coldingham on p. 175; glacial striæ running N. or N.N.W. were observed on the rocks.

Roper, F. C. S. Flora of Eastbourne. 8vo. *London.*

Geological Map of the Cuckmere District [reduced from the Geological Survey Map]. Geology, pp. xi, xii. Marsh Land, pp. xiv, xv. Distribution of plants in relation to geological formations, &c. pp. xxx–xxxiii. W. W.

——. Notes on the Flora of Eastbourne, as compared with that of West Kent and West Surrey. *Papers Eastbourne Nat. Hist. Soc.*

Thinks "that the variations in the flora arose more from the contour of the country and geological structure than from geographical position." W. W.

Russell, R. On the Permian Breccias of the Country near Whitehaven. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 92, 93.

Describes breccia near Bigrigg Moor and Rowrah. It is generally composed chiefly of angular and subangular fragments of Carboniferous Limestone, but other rocks are often present to a large extent; the fragments are embedded in a calcareous and sandy matrix, cemented by peroxide of iron. It lies unconformably on various formations, from Coal Measures to L. Silurian, but it underlies the Permian sandstones. Concludes, from its composition and distinct bedding, that this deposit is due to ice-action in Permian times, not, however, to glaciers or icebergs. Suggests that fragments of rock have fallen on the ice-foot, and have been carried away and dropped in the deeper and quieter sea-bottom. W. T.

——. The Geology of the North Yorkshire Coalfield. *Coll. Guard.* vol. xxx. pp. 563, 564.

Read at Meeting of N. of England and Midland Engineers. [Really the same as the paper noticed in Geological Record for 1874, p. 34, under a different title.]

Sainter, J. D. The Geology of Mow Cop, Congleton Edge, and the surrounding District. *N. Staff. Field Club Papers*, pp. 140–146.

A general account of the geology of the district crossed in an excursion.

Simmons, W. The Metallic Ores of Cornwall.—Group 1. Tin, Copper, Iron, and Lead. *Proc. Liverpool Geol. Soc.* vol. iii. part 1, pp. 28–35.

The chief tin yield is from an area occupying a circle with a radius of 1½ miles. The average produce of the stuff raised is less than 5 per cent. No less than 30 copper-ores occur in the granite, clay-slate or killas, and in the serpentine. The lead-ores are few, the chief source of supply being galena, which occurs in veins associated with tin, copper, and iron, and by itself. The amount of silver averages 40 oz. to the ton, while the average of British mines is only 10 oz. The iron lodes have recently been largely developed; that of Perran is 100 feet in width, consisting of brown oxide, passing in depth into chalybite, below which the lode contains blende, galena, and Towanite.

The E. and W. veins contain tin, copper, iron gossan, and but little lead. The N. and S. veins contain clay, and sometimes lead and iron; where the latter are lead-bearing, and are crossed by E. and W. veins, the lead-ore becomes richer for silver, as at Treskerby Green, where the galena yields 3000 ounces to the ton. C. E. DeR.

Smyth, W. W. President's Address to the Royal Geological Society of Cornwall, 1874. *Ann. Rep. R. Geol. Soc. Cornwall*, pp. v–xiv.

Gives an account of Prof. Moissenet's work on *The Rich Portions of the Lodes of Cornwall.*

——. On the Occurrence of Metallic Ores with Garnet Rock. Note illustrating a series of Copper Ores from Belstone Consols. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 38–45.

Refers to cases in Cornwall where metallic ores have been found associated with garnets. States that in various places on the N. side of Dartmoor copper-ore occurs in the altered killas near its boundary with the granite. Belstone Consols, the most important of the mines, has been opened to a depth of 50 fathoms. There are 3 so-called 'lodes' striking E. and W. and dipping N. They consist of bands of garnet-rock mostly crystalline, and containing disseminated copper-pyrites, iron-pyrites, and mispickel, which sometimes coalesce into a pretty solid rib, 1 to 3 inches thick, now and then associated with quartz. The 'main lode,' measured horizontally, is 96 feet wide, and is really nothing but a thick-bedded mass of garnet-ore, with various ores of copper disseminated through it in specks and strings. The rock between the lode consists of conformable beds of garnet rock and siliceous slate. The whole series of 'lodes' and 'country' is merely a group of conformable beds, probably metamorphosed under the influence of the neighbouring granite. Supposes that the ores were deposited from mineral waters which made their way into the beds through joints and fissures. C. L. N. F.

Sorby, H. C. On the Remains of a Fossil Forest in the Coal Measures at Wadsley, near Sheffield. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 458–460, 2 woodcuts.

The *Stigmariæ* are rooted in an earthy shale; the *Sigillaria*-trunks are cut sharply off at the top of the shale, and are then overlain by sandstone. About 10 stumps were exposed, spread over a length of 40 or 50 yards. Judging from the direction of the roots, the prevailing winds came from the west. W. T.

Stevens, Joseph. Sarsens, Greywethers, or Druid Stones. *Journ. Winchester Sci. Soc.* vol. i. part 4, pp. 224–236.

The same as the paper noticed in the Geological Record for 1874, p. 35, but with large additions throughout, especially under the head "Distribution." W. W.

Stevenson, W. On Evidences of Ice-action in Berwickshire. *Proc. Berwick. Nat. Club*, vol. vii. part 2, pp. 208–210.

Describes the distribution of boulders, the parent rocks of which lie to the W. and N.W. Glaciated rock-surfaces are rare in Berwickshire, that at St. Abb's Head being the only well-marked example. Broken surfaces of rocks (the underlying rocks being solid) are referred to ice. W. T.

Stoddart, W. W. Geological Distribution of some of the Bristol Mosses. *Proc. Bristol Nat. Soc.* n. ser. vol. i. pp. 190–199.

——. Geology of the Bristol Coal-field. Part 2. Silurian and Devonian. *Proc. Bristol Nat. Soc.* n. ser. vol. i. pt. 2, pp. 262–272.

Describes the U. Llandovery Sandstone and the Wenlock Shales and Limestone,. and gives list of fossils. The Old Red Sandstone is also described, and some of the fish-remains occurring in it are noticed. Many sections are given (10 woodcuts). H. B. W.

Sutherland, Adam. Sketch of the Coal-fields in the neighbourhood of Irvine. *Proc. Glasg. Nat. Hist. Soc.* vol. ii. part 1.

Describes the peculiarities of the Bogside parrot-coal, used for the manufacture of Paraffin, and shows that its oily character diminishes towards the east. J. E. T.

Talbot, H. T. The Chloritic Marl of Cambridgeshire. 3 *Rep. Winchester Coll. Nat. Hist. Soc.* pp. 36–40.

An account of the bed, the manner of working, and the fossils.

Tate, [Prof.] R. On the Lias about Radstock. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 493–510.

The Lower Lias at Radstock is only 24 feet thick, but the author recognizes the usual Ammonite zones, each very thin on account of the failure of sediment. The zones are described and their fossils enumerated. The top of the L. Lias had been partially denuded before the deposition of the Middle Lias; the results of this are seen in the conglomerate which forms the base of the M. Lias (or Yellow Lias). In this division also (15 feet thick) the author recognizes the usual zones of the *Am. Jamesoni* series, to which it is wholly referred. The following new species are described:—*Trochus solitarius*, from the conglomerate bed; *Cryptæna affinis*, *Cardita consimilis*, *Cardinia rugulosa*, from zone of *Am. Jamesoni*. Appended to the paper are:—List of species from the Yellow Lias, Hewlett's Hill, Cheltenham; Section [of Middle Lias] in Railway cutting, Fenny Compton, Warwickshire. W. T.

Tawney, E. B. Notes on Trias Dykes. *Proc. Bristol Nat. Soc.* n. ser. vol. i. part 2, pp. 162–166.

Notices the dyke on the Observatory Hill, which occurs in the Mountain Limestone, and is composed of Dolomitic conglomerate. It is considered to have been filled in Triassic times. Several other fissures, from a few inches to 3 feet wide, filled with Triassic material (in the Avon cliffs), are noticed, as also some filled with Rhætic and Liassic material in the neighbourhood of Bristol. The general direction of these fissures and of the joints in the Mountain Limestone are pointed out; and the author thinks that the course of the Avon through its gorge is in intimate connexion with the systems of joints in the limestone, and that many of its bends are primarily due thereto. H. B. W.

Tawney, E. B. Notes on the Lias in the Neighbourhood of Radstock. *Proc. Bristol Nat. Soc.* n. ser. vol. i. pt. 2, pp. 167–189.

Describes sections in the neighbourhood of Radstock, and gives the organic contents of the various beds in detail. Palæontological remarks are made on some of the species, and references are given to the work and opinions of other writers. A table showing the geographical distribution of the *Ammonites* and *Brachiopoda* is appended. R. E., Jun.

Teall, J. J. H. The Potton and Wicken Phosphatic Deposits. Pp. 44. 8vo. *Cambridge.*

Gives an account of the literature of the subject. Describes the phosphatic beds as they are now to be seen. Notices the sections near Potton, mentioning the occurrence of foreign boulders in the coprolite-bed, and pointing out that the fossils occur in two conditions, as ferruginous shells and as derived phosphatic casts. The latter have come from various horizons (Portlandian to L. Neocomian inclusive), proving extensive denudation. At Wicken the phosphatic deposits are banked up against an old island of Coral Rag; they likewise contain indigenous and derived fossils, the former abundant and preserved in calcite, the latter chiefly derived from older Neocomian. Gives a sketch of the Neocomian in Norfolk, Bedford, Cambridge, and Buckingham, noting important sections, and concludes that the Potton and Wicken beds belong to the latest Neocomian. There are remarks on the Neocomians of Lincolnshire and W. Europe, on the origin of the phosphatic matter, and on the physical geography of the period. A. J. J-B.

Tiddeman, R. H. Second Report of the Committee appointed for the purpose of assisting in the Exploration of the Settle Caves (Victoria Cave). *Rep. Brit. Assoc.* for 1874, pp. 133–138. (Reprinted, 8vo. *Lancaster.*)

Chiefly describes the work done with the view of establishing the age of the 'laminated clay,' which uniformly overlies the lower cave-earth. The 'talus' is wholly composed of angular fragments of white limestone fallen from the cliff above. Beneath this is a mass of glaciated boulders, chiefly of black limestone and Silurian rocks. A hole dug through the boulder-bed reached gravel and yellow clay, like that at the base of the laminated clay. It is believed that the laminated clay was formed from the muddy water of an ice-sheet or glacier, and consequently that the cave-earth below it is older than the glaciation of the N.W. of England. In 1872 a small bone of doubtful character was found in the cave-earth lying alongside bones of *Hyæna*, *Rhinoceros tichorhinus*, &c.; and near it were two molars of *Elephas* (believed to be *E. antiquus*). Prof. Busk has shown that the small bone is a human fibula of unusual form, but closely resembling that of the Mentone skeleton. The conclusion is that man inhabited the N.W. of England before the ice-sheet overspread the country. W. T.

Topley, William. The Geology of the Weald (parts of the Counties of Kent, Surrey, Sussex, and Hants). (In part from the Notes of **H. W. Bristow, W. T. Aveline, F. Drew, C. Gould,** and **Dr. C. Le N. Foster.**) Lists of Fossils, revised by **R. Etheridge.** Pp. xiv, 503. 7 plates (maps and sections), 59 woodcuts. *Geological Survey Memoir.* 8vo. *London.*

Part I. Introductory, chaps. i., ii. General sketch of the district, pp. 1–7. Geological literature relating to the district, 8–29.—*Part II. Stratigraphical Geology,* chaps. iii.–xiii. Purbeck Beds, 30–44. Hastings Beds (Fairlight Clays, Ashdown Sand, Wadhurst Clay, Tunbridge Wells Sand, and Grinstead Clay), grouped in the following districts:—1. Hastings and Battle, 2. Cranbrook and Tunbridge Wells, 3. East Grinstead, 4. Cuckfield, 45–95. Weald Clay, 96–111. L. Greensand (Atherfield Clay, Hythe Beds, Sandgate Beds, Folkestone Beds), 112–144. Gault, 145–151. U. Greensand, 152–159. Gravels (Rivers Rother, Stour, Medway, Darent, Mole, Wey, Arun, Adur, Ouse, Cuckmere, Ashburn), 160–204. Recent Deposits (Alluvium, Blown Sand, Shingle), 205–215.—*Part III. Physical Geology,* chaps. xiv.–xviii. Structure of the country (a description of the lines of disturbance, faults, &c.), 216–242. Scenery and Agricultural Characters, 243–269. Denudation of the Weald, 270–301. Recent Geological Changes (Coast-line), 302–320. Origin of the Wealden Beds, 321–328.—*Part IV. Economic Geology,* chaps. xix.–xxv. Ironworks, Coal, Springs and Water Supply, Building Stones, Road Material, Limestones, Manures, &c., Distribution of Population and Disease, pp. 329–405.—*Appendices.* Lists of Fossils, 406–436. List of Specimens in the Museum of Practical Geology, 438–445. Bibliography, 446–483. W. W.

——. Geological Report (Sub-Wealden Exploration Report). *Rep. Brit. Assoc.* for 1874, pp. 22–27.

Gives some details of the beds in the first boring, and suggests the horizons to which they may be referred. Lists of fossils are given.

——. Sub-Wealden Exploration. *Nature,* vol. xi. pp. 284, 285.

Refers to Mr. Blake's letter (see p. 6), and gives reasons why the second boring was commenced on the same site as the first.

—— The Channel Tunnel.—Submarine Explorations. *Nature,* vol. xiii. pp. 133, 134.

Notes recent researches, especially the French Report (see p. 46).

Traill, W. A. On a Mass of Travertine or Calcareous Tufa, called The Glen Rock, near Ballycastle, Co. Mayo, Ireland. (*Brit. Assoc.*) *Geol. Mag.* dec. 2, vol. ii. pp. 608-610.

This rock, 6 to 80 feet thick, and containing over 2,100,000 cubic feet, has been formed by a spring which, issuing from the Carboniferous Limestone, has run over mosses, &c. The stream is now confined to a more regular channel, and the formation of tufa is less rapid. Probably the tufa has not increased in thickness for 300 years; and in parts it is breaking up. W. T.

Traill, W. A. On Geological Sections in the Co. Down. *Rep. Brit. Assoc.* for 1874, *Sections,* pp. 93–95.

Describes the results of the Geological Survey of the district as shown on the published Maps and Sections. The larger part of the county is formed of Lower Silurian beds with interbedded igneous rocks. These were contorted and intersected by dykes of melaphyre, dolerite, and diabase, the sources and "necks" of which still exist in the S. of the county. The granite of Slieve Croob is probably Palæozoic. Only small patches of Carboniferous Limestone now remain. Of Permian beds the traces are still smaller; these rest unconformably on the Limestone or on L. Silurian. Subsequently to this period occurred the eruption of the Mourne granite. Of still later age are two sets of igneous rocks: the quartziferous porphyries and felstones of Slieve Meelmore and Slieve Bearnagh, and the basaltic dykes supposed to be Tertiary. The basalt of Scrabo Hill is possibly an outlier of the Antrim plateau, or it may be a separate neck. The trap penetrates the New Red in sheets and dykes. Under the New Red is Carboniferous Limestone. The author discusses the question of the occurrence of Coal, and believes that none will be found, but that the New Red lies directly on L. Silurian in the areas where the Coal has been looked for. W. T.

Tylden-Wright, C. The Geology of Sherwood Forest and the District. Chapter XVI. of **R. White's** *Worksop, "The Dukery," and Sherwood Forest.* 8vo. *London* and *Worksop,* pp. 283–292, plate.

The formations range from Keuper to L. Coal Measures, the Bunter (conglomerate and pebble-beds) taking up the largest area. The Plate is a "Geological Section of the District of Worksop:" horizontal scale an inch to a mile; vertical, an inch to 300 yards. W. W.

Ussher, W. A. E. On the Subdivisions of the Triassic Rocks between the Coast of West Somerset and the South Coast of Devon. *Geol. Mag.* dec. 2, vol. ii. pp. 163–168.

The subdivisions are, in descending order:—1. Upper Marls, 1000 feet, with veins of gypsum and pseudomorphs of rock-salt. 2. Upper Sandstones, 460 feet; very variable in composition; at about 50 feet from their base are the conglomerates of Otterton Point. 3. Pebble Beds and Conglomerates, with beds of sand and sandstone, 60 to 100 feet. 4. Lower Marls, with beds of sandstone, 460 feet. 5. Lower Sandstones and Breccias, 1000 feet or less; the most variable member of the series. The beds are much faulted, and estimates of thickness based on observed dips and breadth of outcrop are conjectural; in place of the miles of thickness which have been assigned to this formation, it is probable that the total is under 3000 feet. W. T.

Vincent, W. T. Warlike Woolwich: a History and Guide. 8vo. *Woolwich* and *London.* Pp. vi, 137.

Notes on the Geology by **Wells** and **Freeman**, pp. 126, 127; on the old forest in the bed of the Thames, p. 67.

Walker, H. Excursion to St. Mary's Cray, Well Hill, and Shoreham, Kent. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 155–157.

Notes the geology of the district, especially the gravel at Well Hill, which Prof. Prestwich described as Marine and of Glacial age.

Ward, J. C. The Glaciation of the Southern part of the Lake-District and the Glacial Origin of the Lake-Basins of Cumberland and Westmoreland. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 152–166, pl. vii. (map and sections).

Supplementary to papers in vols. xxix., xxx. At the period of maximum glaciation the glaciers were more or less confluent, forming an ice-sheet which moved S. and S.E. over the lower ridges. Some striations crossing watersheds at high levels and in passes or cols, were doubtfully referred to floating ice, supporting the supposition that the submergence exceeded 2000 feet. The moraines belong to the second period of glaciation, the glaciers of which were not confluent, but occupied the heads of all the principal valleys. Some mountain-tarns are due, wholly or in part, to moraines; others are wholly due to glacial erosion. The larger lakes, lying in true rock-basins, are but shallow grooves in the bottoms of the valleys; their depth is small as compared with the thickness of the ice, and they are probably due to glacial erosion. W. T.

——. On the Granite, Granitoid, and Associated Metamorphic Rocks of the Lake-District. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 568–602, plates xxx., xxxi.

Part 1. *On the Liquid-cavities in the Quartz-bearing Rocks of the Lake-District*, pp. 568–589.—Deeply-formed granitic or granitoid rocks must have been subjected to pressure from two causes:—*Downward pressure*, caused by the weight of overlying rocks; *Surplus* or *Outward pressure*, acting from below. A microscopic examination of the rock enables us to estimate the total amount of pressure; this is determined by the relative size of the liquid-cavities and their vacuities. Examination in the field informs us of the greatest amount of downward pressure which can have been exerted; the difference, if any, gives the amount of outward pressure. Probably none of the granitoid rocks of the Lake-district were consolidated at a greater depth than 30,000 feet, whilst the total pressures represent 35,000 to 52,000 feet. The Skiddaw and Eskdale granites were formed respectively at a maximum depth of 30,000 and 22,000 feet; they both indicate large surplus pressure, which probably acted outwards and effected elevation, contortion, and metamorphism. The Shap granite, consolidated at a maximum depth of 14,000 feet, shows much surplus pressure; it probably represents an immature volcanic vent. The volcanic rocks of the Lower Silurian series were not produced from the granites in question; the granites are of more recent date, and their microscopic structure indicates that the outward pressure was not relieved by volcanic action. The mean pressure obtained for Lake-district granites is nearly the same as that for Cornish granite.

Part 2. *On the Eskdale and Shap Granites and their associated Metamorphic Rocks*, pp. 590–602.—It appears that the granites were not the source of the volcanic rocks. But there is a complete gradation between the two; and evidence, derived from microscopic structure, lithological character, and chemical composition, is brought forward to prove that the granites are in great measure due to extreme metamorphism of the volcanic rocks. The Shap granite has a more intrusive character than the others; and the metamorphism around it points in the same direction; but much of the matter of the surrounding volcanic rocks may have been incorporated with it. The Eskdale granite contains but little phosphoric acid; the volcanic rocks much more, especially when near the granite. W. T.

Ward, J. C. A Voice from the Past. *Geol. Mag.* dec. 2, vol. ii. pp. 285, 286.

Gives an extract from a letter by Prof. Sedgwick, in support of the opinion that Shap Boulders were carried over Stainmoor by floating ice, and suggests that ocean-currents may have had less to do with the dispersal than the direction of the prevalent winds. J. G. G.

Ward, Dr. O. On Slickensides or Rock-striations, particularly those of the Chalk. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 113, 114.

Describes striated surfaces and fibrous structure in the Chalk at Eastbourne, and believes that both are due to movements of the Chalk. W. T.

Whitaker, William. Guide to the Geology of London and the Neighbourhood. Pp. xii, 72, also Ed. 2, pp. xii, 73. *Geological Survey Memoir.* 8vo. *London.*

A description of the Geological Survey Map of "London and its Environs" (1874) and of the Geological Model of London in the Museum of Practical Geology. Gives a short account of all the beds that occur in and near the metropolitan area, from the probable underground ridge of old rocks to the latest deposits, with Tables of the places where the best sections may be seen. W. W.

Whitley, Nicholas. The Geology of Lundy Island. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 70–73 (with geological map).

The object is to show that the main joints, both in the granite and in the slate, run parallel to the line of junction of these rocks.

——. The Geology of Penzance Bay and its Shores. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 109–113 (with geological map).

The rocks which occur on the shores of Penzance Bay are Devonian slate, greenstone, granite, elvans, Drift, shingle, and beach-sand. The hornblende-rocks are looked upon as due to ancient volcanic outbursts. The Drift is composed of waterworn pebbles of quartz, elvan, granite, greenstone, altered slate, and flint. The beds of Drift correspond to what are generally known as raised beaches in other parts of the bay; but the author thinks that they could not have been formed without the intervention of ice-action. C. L. N. F.

Willett, H. Tenth to Fourteenth Quarterly Reports on the Sub-Wealden Exploration. 8vo. *Brighton.*

Give an account of the work down to 1825 feet (second boring). The details from the surface to 374 feet are in the Tenth Report; from 374 feet to 1546 feet, in the Twelfth. The Thirteenth contains the Report submitted to the British Association in 1875, also the results of Temperature observations. A notice of the Sperenberg Boring is given in the Tenth. W. T.

Willett, H., and W. Topley. Second Report of the Sub-Wealden Exploration Committee. *Rep. Brit. Assoc.* for 1874, pp. 21, 22.

Gives a general description of progress (of the first boring) down to 1000 feet (see p. 40).

Wilson, J. M. On the probable Existence of a considerable Fault in the Lias near Rugby, and of a new Outlier of the Oolite. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 355, 356.

Describes a sand-pit [in the Drift] at Low Morton, the sand of which lies against a highly inclined face of clay. Suggests that this may be due to a fault, which can be similarly traced for half a mile. S.E. this line passes Kilsby Tunnel, where much difficulty was encountered from water; N.W. the line of supposed fault passes between Rugby and Brownsover; if prolonged further N.W. it would join the Nuneaton fault, both alike throwing down to the N.E. On the plateau at Brownsover there is a mass of Oolite, rudely stratified, having a Stonesfield Slate character. The author believes that this is an outlier in place, and that the fault here has a throw of about 500 feet. W. T.

——. Contributions to the Geology of Hillmorton. *Rep. Rugby School Nat. Hist. Soc.* for 1874, pp. 8–13, plate 6 (map and section).

Sections in Hillmorton seem to show a fault between sand and L. Lias clay, the junction overlain by gravel. The fault trends N.W. and downthrows to N.E., accounting for the Oolitic deposit at Brownsover described in 1871 as Drift, but now regarded as an outlier. W. H. D.

——. Boring at Lodge Farm. *Rep. Rugby School Nat. Hist. Soc.* for 1874, p. 52.

Boring to 101 feet in Liassic clay half a mile E. of Clifton.

Winwood, Rev. H. H. Notes on some Railway-Sections near Bath. *Proc. Bath Field-Club,* vol. iii. no. 2, pp. 129–135.

New sections on the Bath and Evercreech Extension Line between Bath and Combe Down are described. These include sections of Gravel, Inf. Oolite, Midford Sands, U., M., and L. Lias. The fossils from the several formations are noticed, those from the Midford Sands having, it is considered, an Oolitic character. H. B. W.

Wollaston, G. H. On Certain Wealden Beds. *Trans. Clifton Coll. Sci. Soc.* vol. ii. (part 1) pp. 29–33 (woodcut).

Describes a quarry near Hastings, and the Saurian and other fossils yielded by a "bone-bed" there.

Woodward, H. B. A Sketch of the Geology of Middlesex. *The Saturday Half-Holiday Guide.* Seventh issue, pp. 40–44. 8vo. *London.*

An account of the different strata and their fossils, pointing out the physical changes which they indicate, and the connexion between the geology and scenery. H. B. W.

——. Studies and Problems for Somersetshire Geologists. *Proc. Bath Field-Club,* vol. iii. no. 2, pp. 177–182.

Indicates some of the points in the geology of Somersetshire upon which more information is needed, and some of the many theoretical questions that have to be solved. H. B. W.

——. The Origin of our English Scenery. *Pop. Sci. Rev.* vol. xiv. pp. 57–66.

Draws attention to the various denuding agents, and points out their influence on the formation of the scenery, as brought about by elevation of the strata, and modified by disturbances. The larger features of our country may be traced to the age of the strata, the older rocks as a rule being most elevated and hardened; while the minor features are dependent for the most part on the varying lithological characters of the rocks. The formation of plains of marine denudation, and the origin of escarpments and of rivers, are discussed. The amounts of denudation performed by sea and by subaërial agencies are compared, calculations concerning which prove that the latter are the more powerful. H. B. W.

Worth, R. N. Alluvial Deposits on Plymouth Hoe. *Trans. Devon. Assoc.* vol. vii. pp. 150–153.

Gives the results of some recent excavations on the ridge of Devonian limestones forming the Hoe, the level of which averages 100 feet above the sea. This is regarded as a platform of denudation; and the overlying deposits of pebbles, clay, and sand, having an origin at first fluviatile and then both fluviatile and marine, are accounted for by a gradual elevation of the land. T. M. H.

Young, John. On a Bed of Fine-grained Indurated Sandstone, enclosing Rolled Pebbles of Quartzite, interstratified with the Trap of the Campsie Fells. *Trans. Geol. Soc. Glasg.* vol. v. part 1, pp. 51–54.

Note of occurrence. Sandstone probably of Carboniferous age, but its origin doubtful.

——. On the Parallelism of the Scottish and North-Irish Carboniferous Strata. *Proc. Glasg. Nat. Hist. Soc.* vol. ii. part 1.

Founds his remarks chiefly on the geological age of the Ballycastle Coal-field and its relation to the Carboniferous rocks of the west of Scotland as described by Hull, and generally corroborates Hull's views as to the parallelism, lithological and palæontological, of the Carboniferous rocks in N. Ireland and W. Scotland. J. E. T.

Young, Robert. The Water-bearing Rocks between Moira and Lurgan. *Proc. Belfast Nat. Hist. Soc.* Session 1874–75, pp. 33, 34.

Considers that a large quantity of the drainage passes through the interstices of the Chalk and rises in Lough Neagh along a line of fault in

its bed. The trap-dykes which cut through part of the district seem to act in some cases as barriers, damming back part of the water, increasing the supply, and also preserving its purity. E. T. H.

Bristol and its Environs Historical Descriptive & Scientific Published under the sanction of the Local Executive Committee of the British Association. Pp. viii, 475. 8vo. *London* and *Bristol.*

Section VII. Physical Geography and Geology:—*Physical Description*, and *History of Bristol Geology*, pp. 319–326, by **E. B. Tawney.** *Silurian* (U. Llandovery Sandstone, Wenlock Shales, and Limestones), figs. 4–6, *Devonian*, with analyses of igneous rocks from Mendip and Damory Bridge, figs. 7–13, and *Carboniferous Period* (the Clifton section, with plate, L. Carboniferous shales, Mountain Limestone), pp. 326–354, by **W. W. Stoddart.** *Coal Measures* and *New Red Period*, pp. 354–367, by **E. B. Tawney.** *Rhætic and Liassic Formations*, pp. 367–377, by **R. Tate.** *Inf. Oolite* (and newer deposits), pp. 377–382, by **E. B. Tawney.** H. B. W.

Chemin de Fer Sous-Marin entre la France et l'Angleterre. Rapports sur les Sondages exécutés dans le Pas de Calais en 1875. Fol. *Paris.*

Contains three reports, separately paged. **A. Lavelley**, pp. 8, a general report. **E. Larousse**, pp. 15 (chart), Exploration du Détroit pendant les mois d'Août et Septembre 1875—giving a description of the methods employed in examining the bottom of the Channel. **A. Potier et A. de Lapparent**, pp. 16 (2 maps, sections, and woodcuts). Rapport sur l'Exploration géologique sous-marin du Pas de Calais. Gives the results of the soundings, mapping the outcrop of the "Craie de Rouen" from the French coast to within a few miles of the English coast. W. T.

Correspondence respecting the proposed Channel Tunnel and Railway, Commercial Reports, no. 6. Pp. 76. Fol. *London.* (Maps, plans, and sections.)

See also the following:—

Anon. Channel Tunnel: p. 48.

Baily, W. H. British Fossils. Part IV. (General Remarks on the Geology.) *Post*, under PALÆONTOLOGY, INVERTEBRATA.

Barrois, C. Gault, Paris Basin. Refers to England: p. 49.

Brown, Dr. R. Papers on Greenland. Relates to ice-remains in Britain. *Post*, under ARCTIC REGIONS.

Dewalque, Prof. G. Cambrian, Wales: p. 58.

Durand, H. Channel Tunnel: p. 61.

Kinahan, G. H. Granitic &c. Rocks of Yar Connaught. *Post*, under PETROLOGY.

——. "Valleys, &c." Largely illustrated from Irish Geology. *Post*, under PHYSICAL GEOLOGY.

2. *EUROPE.*

Abich, Prof. H. Geologische Beobachtungen auf Reisen im Kaukasus. [Geological Observations in the Caucasus.] 138 pp., one map. *Moscow.* Also *Bull. Soc. Imp. Nat. Mosc.* 1874, no. 3 (1875), p. 63.

The chief subjects are:—the Betschau hot spring formation, the Jurassic coal-bearing beds of N. Caucasus, the quartz-trachyte of Tschegem, and the glaciers of N. Caucasus. G. A. L.

Ackermann, —. On the occurrence of Calc-sinter near Quedlinburg. *Sitz. Isis Dresden.*

Ammon, L. von. Die Jura-Ablagerungen zwischen Regensburg und Passau. [Jurassic beds of the country between Ratisbon and Passau.] Pp. 197. *Munich.* 4 plates and table of strata.

Entitled a Monograph of the Jurassic district of Lower Bavaria, with special reference to similar beds in Franconia. The Keilberg district is first described, containing Lias and Upper Jurassic; then that of Münster, near Straubing; and last that between Vilshofen and Passau. The chief development of beds is in the M. and U. Oolites [weisse Jura]: the stages adopted are, above the Kelloway:—1. Dingelreuth beds, with *Amm. biarmatus*; 2. Voglarn beds, with *A. transversarius*, Scyphia limestones, &c.; 3. Ostenburg beds, cherty limestones, with *A. bimammatus*, forming the Oxford group. Then Soldenau beds, with *A. tenuilobatus*, placed in the Kimmeridge. The deposits are not allied to those of the Alps, but to those of Franconia and Galizia, *e. g.* Balin, showing that the Jurassic seas of these districts were in connexion before the uplift of the Bohemian mountain-chain, which is posterior even to the Cretaceous epoch.

In the palæontological part a full list of species and their range is given, the following new ones being described:—*Perisphinctes Eggeri* and *suberinus*, from Soldenau beds; *Lima scaberrima*, from the transversarius-beds; *Monotis Gümbeli*, *Terebratula subbavarica*, from Ortenburg beds. E. B. T.

Anon. Der Silber- und Blei-Bergbau zu Pribram in Böhmen. [Lead and Silver Mining at Přibram in Bohemia.] *Vienna.*

——. Rade d'Anvers. Forages opérés en 1871 et 1874. [Borings in Antwerp Roads in 1871 and 1874.] *Ministère des Travaux publics de Belgique.* 1875?

——. Session extraordinaire de la Société géologique de France à Genève et Chamounix en 1875. [Meeting of the French Geological Society at Geneva and Chamounix in 1875.] *Arch. Sci. Phys. Nat.* t. liv. pp. 143–160.

Notice of the meeting.

Anon. Aachen, seine geologischen Verhältnisse und Thermalquellen, etc. [Aix-la-Chapelle, its geology, thermal springs, &c.] *Aix.*

——. The Marble Quarries of Carrara. *Building News*, vol. xxix. pp. 105, 106.

Mentions a Report on this subject to the Italian Minister of Public Works.

——. Progress of the St. Gothard Tunnel. *Coll. Guard.* vol. xxix. pp. 23, 130, 164, 273, 661, 745.

Notes of progress, chiefly from the *Revue Industrielle.* The rocks passed through are described, and temperature observations at the faces of both ends are recorded. G. A. L.

——. Le Tunnel de la Manche. [The Channel Tunnel.] *L'Explorateur géographique et commercial*, no. 2, pp. 43, 44, with plan and section.

Geological to a great extent.

—— (J. P.), [**J. E. H. Peyton**]. Deep-Boring in Prussia. *Geol. Mag.* dec. 2, vol. ii. p. 48.

Describes the boring at Sperenberg, 4040 feet deep, in the New Red.

——. Note on the supposed occurrence of Gold in the Morbihan, France. *Iron*, vol. vi. p. 203.

——. Iron Mines of Bosnia. *Iron*, vol. vi. p. 203.

——. The Coal-Mining Industry of Russia. *Coll. Guard.* vol. xxx. pp. 119, 120.

Based on the latest official sources of information as to the present condition of the Russian Coal-fields. The iron-production returns are also quoted. G. A. L.

Arzruni, Dr. A. Die Schwefellager von Kchiuta im Daghestan. [Sulphur-deposits of Kchiuta.] *N. Jahrb.* Heft i. pp. 49–51.

Letter referring to the sulphur-deposits of the Caucasus, especially that at Kchiuta in Eastern Daghestan. The mineral occurs in nests and lenticular masses, in some cases 4 metres thick, associated with gypsum and enclosed in limestone. It has recently been explored, with the view of using it locally in the manufacture of sulphuric acid. F. W. R.

Bachmann, —. [Giants' Cauldrons near Bern.] *N. Jahrb.* Heft i. pp. 53, 54.

Letter announcing the discovery of "Giant's Cauldrons" (*Riesentöpfe*) in Molasse sandstone near Bern. They are filled with boulders, among which are several characteristic rocks, showing that they are brought down by the old glacier of the Rhone. F. W. R.

Baltzer, Dr. A. Ueber Bergstürze in den Alpen. [Landslips in the Alps.] 8vo. *Zürich.* Pp. 50; illustrated.

Describes several Alpine landslips, and classifies them as follow:—1. Falls of Rock (*Felsstürze*), *e.g.* Felsberg; 2. Landslips (*Erdschliffe*), *e.g.*

Rorschach; 3. Mud-streams (*Schlammströme*); soft beds crushed by overlying rock move down towards valleys, like lava-streams, *e. g.* Wäggis in 1795; 4. Mixed falls (*gemischte Stürze*), consisting of fragments of rock, earth, and mud, *e. g.* Goldau and most others. Recognizes in each slip three regions: 1. Origin; 2. Course; 3. Final position. Refers most of the falls to water resting on clay or other impermeable material, and thus loosening the base of the overlying rock, which ultimately loses its hold. F. W. R.

Baltzer, Dr. A. Ueber einen neuerlichen Felssturz am Rossberg, nebst einigen allgemeinen Bemerkungen über derartige Erscheinungen in den Alpen. [Recent Fall of Rock at the Rossberg.] *N. Jahrb.* Heft i. pp. 15–26; with 3 woodcuts.

Account of a fall of rock in August 1874, at the Rossberg, near Arth, in Switzerland. Smaller than the great fall of the Goldau in the same locality in 1806. The fall of the Goldau is called a *Bergsturz*; that of the Rossberg only a *Felssturz*. Also describes a fall at Bilton, in Glarus, in April 1868, and a landslip at Sax, near Chur, in 1874. Classifies slips and falls as above, and discusses the causes of such phænomena. F. W. R.

Barrois, Charles. L'Aachénien et la limite entre le Jurassique et le Crétacé dans l'Aisne et les Ardennes. [The Aachenian and the junction of Jurassic and Cretaceous in Aisne and Ardennes.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 257–265.

At the base of the Cenomanian in Belgium and N. France is a terrestrial deposit called the Aachenian. Three opinions exist regarding its age. Gosselet calls it Gault, De Lapparent believes it to be Wealden, while, according to Cornet and Briart, its formation has continued from the end of the Carboniferous period to that of the Gault. M. Barrois shows that the Aachenian conglomerate of Aisne contains the fossils of the *Ammonites mammillaris* zone at the base of the Gault, and that this is underlain by a series of sands and clays (cendres), which may be traced laterally into clays containing Oxfordian fossils. The ferruginous sands (Aachenian) are found all along the primary range of the Ardennes; and he therefore agrees with Gosselet in referring them to the Gault; at the same time he thinks it not improbable that the original material was collected as a terrestrial deposit on the plateaux of the Ardennes, and was rearranged by the waves of the Gault sea, under which that region gradually sank. A. J. J-B.

——. Sur le Gault et sur les couches entre lesquelles il est compris dans le bassin de Paris. [The Gault of the Paris Basin.] *Ann. Soc. Géol. Nord*, t. ii. pp. 1–61.

Passing over the W. part of the basin, where the Gault is much concealed by higher beds, the author commences with a study of the country between the valleys of the Loire and Seine, in the natural regions of Puisaye and Perthois. It is found that the classification adopted in one place will not hold in others, and that there is great difficulty in fixing the upper limit of the Gault and the base of the

'*Craie glauconieuse*,' in consequence of the lenticular arrangement of the beds and their variable lithological constitution. He proceeds to establish the zone of *Ammonites inflatus*, which he considers to be distinct from the true Gault or Albian, by its fauna, its lithological character, and its wider geographical distribution. In its typical development it consists of a mass of clayey marls, in which beds of greensand are lenticularly disposed and sometimes attain great thickness; its characteristic fossils are *Amm. inflatus*, *Inoceramus sulcatus*, and *Ostrea vesiculosa*. In tracing the beds round the basin the Gault of Puisaye and Perthois is found to comprise two members, (1) Sands with *Ammonites mammillaris*; (2) Clays 90–120 feet thick, which are sometimes partly replaced by lenticular sandy beds, such as the Grès des Drillous and the Sables de Puisaye; above these come clayey marls, with *Amm. inflatus*, 30 to 300 feet thick. In Argonne these marls are replaced by sandy beds called '*Gaize*,' while the Gault clays gradually thin out, allowing the *Gaize* to overlap on to the Lower Sands. In Artois he considers the *Amm. inflatus* zone to be represented by a few feet of sandy clay; but even these eventually thin out, allowing the *Pecten asper* zone to come down on to the *Amm. mammillaris* sands. Thus the Gault thins out against the axis of Artois; but the complete series is found again in the Boulonnais, and constitutes what has been called Gault at Wissant. He then briefly describes the distribution of the Gault in England, and concludes with discussing the value of an *étage*, and the mode in which the beds described should be grouped; he proposes to unite the Aptian and Albian into one *étage*, the zone of *Amm. inflatus* forming the base of the '*Craie glauconieuse*' or Cenomanian. A. J. J-B.

Barrois, Charles. Couches traversées à Liévin par la fosse Numéro 3. [Beds sunk through at Liévin.] *Ann. Soc. Géol. Nord*, t. ii. p. 63.

The section shows:—1, *Micraster* chalk; 2, chalk rock; 3, *Terebratulina gracilis* chalk-marl; 4, *Inoceramus labiatus* do.; 5, *Ammonites Rhotomagensis* glauconitic chalk; 6, chloritic marl; 7, *Pecten asper* marls; 8, *Terebratella Menardi* bed (*Sarrasin*=*Tourtia* of Montignies). The Coal Measures are reached at about 152 metres. G. A. L.

——. La Zone à *Belemnites plenus*. Étude sur le Cénomanien et le Turonien du Bassin de Paris. [Zone of *Bel. plenus*, between the Cenomanian and Turonian of the Paris Basin.] *Ann. Soc. Géol. Nord*, t. ii. pp. 146–193.

When the L. and U. Chalk are traced round the Paris Basin, the lithological characters of the different subdivisions are found to vary, the beds being mainly calcareous on the N. and S., while argillaceous conditions prevail in the E. Beginning with the calcareous region, the author treats the following divisions in detail, and gives lists of fossils from all:—1. Zone of *Ammonites inflatus*. 2. Zone of *Pecten asper*.' 3. Zone of *Holaster subglobosus*: this he divides into four horizons, viz. *a*, of *Plocoscyphia maeandrina*; *b*, of *Amm. varians*; *c*, of *Amm. Rhotomagensis*; *d*, of *Bel. plenus*. He speaks briefly of the zones above, viz. 4. Zone of *Inoceramus labiatus*; 5. Zone of *Terebratulina* *gracilis*; 6. Zone of *Micraster breviporus*. The eastern developments of the zones, where they have an argillaceous facies, are next considered,—first, in the department of Marne, where the clay of zone 1 is replaced by '*gaize*,' while argillaceous marls occur in zone 2; zone 3 presents two divisions only in the S., and in the N. only one, viz. that of *Bel. plenus*; zone 4 continues as nodular chalk; and zone 5 becomes more clayey. In the Ardennes zone 1 is chiefly sandy, zone 3 is only represented by the marl of *Bel. plenus*, zone 4 is wanting, and zone 5 is still argillaceous. In Aisne and Nord the series is much the same, but zones 3 and 4 are fully represented by argillaceous beds. A full list of the fauna found in the zone of *Bel. plenus* is added, and a table of the variations which have been traced in the beds described. A. J. J-B.

Benoit, Emile. Essai d'un tableau comparatif des terrains tertiaires dans le bassin du Rhône et des Usses. [Comparative table of the Tertiary beds in the Basin of the Rhône and of the Usses valley.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 436–451.

In descending order the divisions recognized by the writer in this district are:—

1. Sandy Mollasse.	=Fahluns of Touraine.
2. Hard beds and shelly grits.	
3. Grey Mollasse.	
4. Blue Mollasse.	
5. Local conglomerate.	
6. Grouty Mollasse.	=Orleans limestone and limestone and millstone of the Beauce.
7. 3rd freshwater beds and lignites.	
8. 2nd red Mollasse.	=Fontainebleau sands and pebble-beds.
9. Drifted beds.	
10. Felspathic grit.	=From the Brie limestone to the white marls of the Paris Basin inclusive.
11. 2nd freshwater beds.	
12. Gypseous Mollasse.	
13. 1st freshwater bed.	
14. Micaceous grit (fucoidal ?).	
15. 1st red Mollasse.	
16. Siderolitic deposits.	=From the last to the Chalk exclusive.

G. A. L.

Berthelin, G. Note sur les subdivisions de l'Étage néocomien aux environs de Bar-sur-Seine. [Neocomian subdivisions in the neighbourhood of Bar-sur-Seine.] *Mém. Soc. Acad. Aube*, 3 sér. t. xi. (xxxviii.) p. 237.

Bianconi, G. A. Prove della contemporaneità dell' epoca glaciale col periodo pliocenico a Balerna e a Monte Mario sul Reno. [Proofs of Synchronism of the Glacial epoch with the Pliocene period at Balerna and at Monte Mario.] *Rend. Acc. Sci. Bologna.*

——. [On some Argillaceous Slate of Miocene age.] *Rend. Acc. Sci. Bologna.*

Bingmann, E. [Discovery of a deposit of Potash and Rock-salts at Peine.] *Zeitsch. Berg-, Hütt. Salinenw.* vol. xxiii. p. 41.

About three miles south of Peine, on the Brunswick-Hanover line of railway, the Muschelkalk appears beneath the Cretaceous series. This has been pierced by several borings in search of water, which have proved the existence of the Bunter Sandstein formation below. The conditions of the stratification being similar to those observed at Stassfurt, Leopoldshall, and Thiede, led to the supposition that a deposit of potash and rock-salt might be found. A boring put down to the depth of 286·6 metres has already proved a thickness of 73·2 metres of salt, of which the upper section of 20·6 metres contains a mixture of potash-, soda- and magnesia-salts, similar to that of Stassfurt, though on a smaller scale. H. B.

Bischof, F. Die Steinsalzwerke bei Stassfurt. [The Stassfurt Rock-salt works.] *Halle.*

Botella, Federico. La Ciudad Encantada, Hoces, Salegas y Torcas de la Provincia de Cuença. [The Enchanted City, Province of Cuença.] *An. Soc. Españ. Hist. Nat.* vol. iv. part 2; and separately published, *Madrid.*

Describes some fantastically shaped rocks near Cuença, known as the "Enchanted City." Investigates their origin, and explains the causes of other erosive phenomena of that locality. A map of the valley of the river Huecar, two plates with sections and sketches, and two photographic views from "the Enchanted City" accompany this paper. J. M'P.

Botti, U. Sulle rocce impastate entro al Serpentino. [Serpentine conglomerate, &c.] *Boll. R. Com. geol. Ital.* vi. pp. 63–73 (woodcut).

On the occurrence of a conglomerate, with fragments of various rocks cemented by a serpentinous paste; with notes on the geology of the mountains near Pontremoli and the Magra valley. E. B. T.

Boué, Ami. Sur les gîtes de sel gemme de la Roumanie et sur les grès Carpathiques. [On the Rock-salt deposits of Roumania and on the Carpathian grits.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 52–54.

Rejoinder to M. Coquand's remarks [see GEOLOGICAL RECORD for 1874, p. 54]. The writer restates his views as to rock-salt deposits being for the most part due to submarine brine-springs, accompanied by ejections of clayey marls, not to the evaporation of inland seas. The next point is as to the age of the Carpathian or Viennese grits, some of which are undoubtedly Cretaceous, whilst some are of the age of the Swiss *Flysch*, and others are pre-Cretaceous. Points out the present state of uncertainty on this subject. G. A. L.

——. Einiges zur paläo-geologischen Geographie. [Some points of Palæo-geological Geography.] *Vienna.*

Boutillier, Louis. Notice nécrologique sur M. Antoine-François Passy. [Obituary notice of M. Passy.] 32 pp., *Rouen.*

Gives an account of that geologist's work in the stratigraphical geology of various parts of France.

Briart, Alph. Compte-rendu de l'excursion du 1^{er} Septembre à Maisières. [Account of excursion to Maisières.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 588–592.

Describes the Cretaceous beds in a ravine running from the Camp de Casteau.

——. Compte-rendu de l'excursion du 3 Septembre à Piéton, Carnières, Morlanwelz, et Haine-Saint-Pierre. [Account of excursion to Piéton, &c.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 618–624 (1 fig. in text).

Describes curious sandpipes, by some considered as having been excavated from below—as being, in fact, natural artesian wells.

Briart, A., and F. Cornet. Sur la présence du système tongrien de Dumont dans le pays de Herve, sur la rive droite de la Meuse. [Occurrence of Tongrian in the Herve district, on the right bank of the Meuse.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* pp. lxxiii–lxxv, woodcut in text.

Note of a railway-cutting between Battice and Chaîneux.

Bristow, H. W. Deep Boring in Prussia. *Geol. Mag.* dec. 2, vol. ii. pp. 95, 96, 140.

The Sperenberg boring is 4172 feet deep in Triassic beds. The upper part is through Gypsum, passing down into Anhydrite. At 291 feet pure rock-salt was met with, in which the boring continued to the bottom [see GEOLOGICAL RECORD for 1874, pp. 105, 162]. W. T.

Brögger, W. C., and H. H. Reusch. Vorkommen des Apatit in Norwegen. [Occurrence of Apatite in Norway.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 646–702, with 5 plates.

Describes the occurrence of Apatite in upwards of 20 Norwegian localities. In all cases the mineral occurs in veins, which pass indifferently through eruptive and sedimentary rocks. Those in Gabbro are described first; then those in other rocks; lastly, each mineral is described in detail. The authors refer the veins to an eruptive origin, and seek to explain the regular structure of the veinstone; near the walls the minerals are often finely granular, but in the centre of the vein crystallized, and the crystals are often curved. They conclude that the eruption of the veins carrying Apatite was contemporaneous with or immediately after the outburst of the Gabbro. F. W. R.

Burthe, P. L. Note sur les fractures qui ont présidé à la formation des filons aurifères de Gondo, et sur les relations géométriques qui définissent leur structure. [The Dislocations which have caused the auriferous veins of Gondo, and the geometrical relations which determine their structure.] *Ann. Mines,* sér. 7, t. vii. pp. 199–207, pl. v. figs. 1–4.

Applies to this district of the Valais the views published by M. Moissenet on the rich portions of veins, with consistent results. Examines specially the mechanical characters of the veins of the region. There are three chief directions, N. 20° W., N. 25° W., and N. 30° W., the first being that of the rich veins. G. A. L.

Burton, Capt. R. F. Ultima Thule; or, A Summer in Iceland. 2 vols. pp. 380 and 408, 30 illustrations, 2 maps. *London* and *Edinburgh.*

Throughout, the geology of the districts visited is described. A treatise on "Sulphur in Iceland" forms an Appendix, vol. ii. pp. 328–404, in 8 sections:—1. Account of O. Henschel's Report on the Icelandic Sulphur Mines (1776); 2. Sir G. S. Mackenzie's account of the Krísuvík diggings (1812); 3. Extract from Consul Crowe's Report on the mineral resources of Iceland (1871–72); 4. Letter on Mr. Vincent's paper on the subject (1873); 5. Reprint of a paper by Dr. C. C. Blake on Sulphur in Iceland (1873); 6. Sulphur in Sicily; 7. Sulphur in Transylvania; 8. Sulphur in the Andaman Islands, from Dr. Mouat's book (1863). The author's researches respecting sulphur in Iceland are scattered through the work. G. A. L.

Calderon, Salvador. Estudios geologicos de España. [Geological Studies in Spain.] *Madrid.*

Capellini, Prof. G. Calcare a Amphistegina, strati a Congeria e calcare di Leitha dei Monti Livornesi. [Leghorn Tertiaries, &c.] *Boll. R. Com. geol. Ital.* pp. 241–244; also *Rend. Acc. Sci. Bologna* (8 pp.).

Note on the discovery of fossil plants allied to those of Bilin, of Congeria beds, &c. Above freshwater Miocene deposits come salt water Pliocene, without any intermediate brackish water deposits. E. B. T.

Chambrun de Rosemont, — de. Note sur le Diluvium de la Haute-Tarentaise; preuves que les grands glaciers n'ont pas produit les grands cours d'eau. [Note on the Drift of the Haute-Tarentaise; proofs that great glaciers have not produced great rivers.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 481–483, 1 fig. in text.

Chancourtois, A. E. B. de. Unification des travaux géographiques et géologiques. [Unification of geographical and geological work.] 162 pp., 3 plates, 8 tables. *Paris.*

Consists of 7 memoirs brought together for the consideration of the Geographical Congress in 1875. 1 and 2 are geographical; 3 describes the system on which the drawing up of the detailed geological map of France is carried out; 4 gives the history of that survey, with a reduction of the table of divisions adopted by its directors; 5 consists of the detailed scheme of signs, colours, &c. used; 6 is on the application of 5; 7 urges a more strict uniformity in geological investigations, and the desirability of the union of geological, hydrological, and meteorological studies. A table showing the position which the various departments of geology should occupy in a general classification of the sciences is given. The whole refers to French geology. G. A. L.

Chelle, —. Découverte d'un gîte calaminaire à Bagnères-de-Luchon. [Discovery of a deposit of calamine at Bagnères-de-Luchon.] *Bull. Soc. Hist. Nat. Toulouse,* t. viii. p. 411.

Choffat, P. Le corallien dans le Jura occidental. [Coralline Oolite in the Western Jura.] *Arch. Sci. Phys. Nat.* t. liv. pp. 383–398.

Cogels, Paul. Observations géologiques et paléontologiques sur les différents dépôts rencontrés à Anvers lors du creusement des nouveaux bassins. [Deposits met with in the new docks, Antwerp.] *Ann. Soc. Mal. Belg.* t. ix. pp. 7–32.

The deposits described are:—I. The Diestian sands: II. The Scaldisian sands, comprising 1, sands with *Isocardia cor*; 2, sands with *Trophon antiquum* (*Fusus contrarius*); and 3, a greenish argillaceous sand: III. Campinian sands, and the modern deposits (peat, black clay with freshwater shells, and the Polders clay). Full lists of the fossils belonging to each division are given. G. A. L.

Colladon, Prof. D. Les travaux mécaniques pour le percement du tunnel du Gothard. [The St. Gothard Tunnel works.] *Arch. Sci. Phys. Nat.* t. liv. pp. 329–361.

Contains some geological information.

Collot, L. Sur le terrain jurassique dans l'Ouest du département de l'Hérault. [Jurassic of Western Hérault.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 389–396, 1 plate and 1 fig. in text.

Gives detailed sections of the Jurassic and Liassic series from the *Avicula contorta* beds upwards. The white limestones of the Infra-Lias attain near Lodève a thickness of 200 metres. The *Gryphæa arcuata* beds are absent. The general character of the divisions present is a gradual thickening towards the N.W. G. A. L.

Cook, E. T. The Glacier Garden of Lucerne. 3 *Rep. Winchester Coll. Nat. Hist. Soc.* pp. 46–48.

An account of funnel-shaped hollows in the rock, filled with débris, known as "Giants' Pots," near the Lion Monument. The formation of these, with the rounded blocks of stone in them, is referred to the time when the glaciers had a far greater extension. There are 16 pots, the largest being 40 feet in diameter. W. W.

Coppi, Fr. Brevi note sulle Salse modenesi. [On Mud Volcanoes.] *Boll. R. Com. geol. Ital.* pp. 231–237.

Describes the efflorescence of salts, sodic chloride chiefly, on the sides of the mud-cones in the Modena district, with other details concerning these salt-water and mud eruptions. E. B. T.

Coquand, H. Histoire des Terrains stratifiés de l'Italie centrale, se référant aux périodes primaire, paléozoïque, triasique, rhétienne et jurassique (1ère partie). [The Primary, Palæozoic, Triassic, Rhætic, and Jurassic stratified deposits of Central Italy, 1st part.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 26–46. An abstract of the chief portion of this paper in *Geol. Mag.* dec. 2, vol. iii. pp. 289–292 (1876).

Gives a detailed account of the opinions which have at various times been held by the writer and the chief Italian geologists respecting the age and stratigraphical relations of the beds of the Apuan Alps and of the Campigliese. A table of the formations as now recognized, with full lists of fossils, is given. M. Coquand regards the statuary marbles of Carrara as Carboniferous, and the famous *calcare rosso ammonitifero* as Middle and Lower Lias. G. A. L.

Cornet, F. L. Compte-rendu de l'excursion du 31 Août [1874] aux environs de Ciply. [Account of Excursion to Ciply.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 567–577, 3 figs. in text.

Describes chiefly the Cretaceous rocks of the district, which are in descending order:—1. The "tufeau" of Ciply, including the Malogne conglomerate, which is worked for phosphatic nodules at Bavay; 2. The brown Chalk of Ciply; 3. The Spiennes Chalk; 4. The Nouvelles Chalk; 5. The Obourg Chalk; 6. The St.-Vaast Chalk. Phosphates are also worked in the Ciply wood in No. 2. Lists of fossils are given. G. A. L.

——. Compte-rendu de l'excursion du 1^er^ Septembre à Harmignies, Spiennes et Mesvin. [Account of excursion to Harmignies, etc.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 582–588, 1 fig.

Describes chiefly the lower members of the Cretaceous noticed above.

Cornet, F. L., and A. Briart. Aperçu sur la géologie des environs de Mons. [Geology of Mons.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 534–553.

Printed separately in 1874, *see* GEOLOGICAL RECORD for 1874, p. 54, "Lecture d'ouverture à la réunion extraordinaire de la Société Géologique de France à Mons."

——, ——. Compte-rendu de l'excursion du 2 Septembre [1874]: Calcaire Grossier de Mons, Meûle de Bracquegnies. [Account of excursion of the 2nd Sept.: 'Calcaire grossier' of Mons, Bracquegnies millstone.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 594–598.

Both horizons are described.

——, ——. Note sur l'existence dans le terrain houiller du Hainaut de bancs de calcaire à crinoïdes. [Beds of Encrinital Limestone in the Coal Measures of Hainaut.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires,* pp. 52–57.

Note of limestone at Baudour, containing *Chonetes Laguesseanea,* De Kon., and *Productus carbonarius,* De Kon., besides encrinite-stems.

——, ——. Sur le synchronisme du système hervien de la province de Liége et de la craie blanche moyenne du Hainaut. [Synchronism of the Hervian system of Liége with the Middle White Chalk of Hainaut.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires,* pp. 108–122.

The equivalence of these deposits is shown on Palæontological grounds.

Cortazar, Daniel de. Descripcion física, geológica y agrológica de la Provincia de Cuença. [Physical, Geological, and Agricultural description of the Province of Cuença.] Pp. xvi. 406, 4 plates (fossils, views, sections, and map), 43 woodcuts. *Mem. Com. Map. Geol. Españ.*

Cotta, Prof. B. von. [Chalk and Drift of Rügen.] *N. Jahrb.* Heft vi. p. 636.

Letter on the dislocations in the Chalk and Drift of Rügen. Believes that Forchhammer's explanation by upheaval is untenable, and inclines to Johnstrup's view, which refers the phenomenon to ice-action [see GEOLOGICAL RECORD for 1874, p. 74]. Objects to some of Suess's views expressed in the 'Enstehung der Alpen.' F. W. R.

Cotteau, G. Note sur une excursion à Faxœ (Danemark). [Excursion to Faxöe.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 51, 52.

Describes sections of Faxöe chalk quarries and of Höirup cliff.

Credner, Prof. Ueber nordisches Diluvium in Böhmen. [Drift in Bohemia.] *Sitz. nat. Ges. Leipzig*, No. 6. [From *N. Jahrb.* Heft viii. p. 881.]

The occurrence of Scandinavian boulders in the Drift of Northern Bohemia shows that an inlet of the Diluvial Sea existed here, and communicated with the northern waters by means of what is now the low sandstone plateau of the Saxon and Bohemian Switzerland. Finds the upper limit of drift on the Lausitz mountains to be 407 metres above sea-level. F. W. R.

Daubrée, —. Les montagnes d'Auvergne. [The Mountains of Auvergne.] *Club alp. Franç.* 1ère an. (1874), p. 268.

Debray, H. Coupe près du canal de la Basse-Deûle près Lille. [Section near Lille.] *Ann. Soc. Géol. Nord,* 1874–75, p. 61.

Note of section (Landenian beds).

Delacroix, —. [Boring at Miserey, near Besançon (Doubs).] *Rev. Géol.* t. xi. pp. 155, 156.

Detailed section given. Rock-salt, 55 metres thick, was struck at 166·8 metres, in Upper Triassic rocks.

Delage, —. Étude sur les terrains silurien et dévonien du Nord du département de l'Ille-et-Vilaine. [Silurian and Devonian of northern Ille-et-Vilaine.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 368–385, plates ix, x.

A detailed description, with small geological map (pl. ix), of the geology of the country between Rennes, Saint-Aubin-d'Aubigné, and Saint-Pierre-la-Cour. The divisions recognized are:—1. Bilobite grits; 2. Slates and grits; 3. Graptolite schists, these three representing the Silurian; 4. Lower grits; 5. Schists and greywacke; 6. Limestone; 7. Schist above the limestone; 8. Grits above the limestone, representing the Devonian. A limestone overlying No. 8, and which had been hitherto looked upon as Devonian, is shown to be Lower Carboniferous. 17 sections (pl. x) illustrate the lie of these beds. G. A. L.

Delesse, Prof. A. Note sur la carte hydrologique du département de Seine-et-Marne. [On the Hydrological Map of the Seine-et-Marne.] *Compt. Rend.* t. lxxxi. pp. 753, 754. See also *N. Jahrb.* Heft vi. pp. 633–636.

Summarizes the conclusions respecting the distribution of the permeable and impermeable beds to which one is led by a study of the map, in which horizontal curves represent the surface of the underground sheets of water. G. A. L.

Desor, Prof. E. Le paysage morainique, son origine glaciaire et ses rapports avec les formations pliocènes d'Italie. [Moraine-features, their origin, and their relations with the Pliocene of Italy.] Pp. xi, 94, *Paris* and *Neuchâtel.* See also *Arch. Sci. Phys. Nat.* t. liv. pp. 48–61.

Dewalque, Prof. G. Sur quelques fossiles triassiques du grand-duché de Luxembourg. [On Triassic Fossils from Luxemburg.] *Ann. Soc. Géol. Belg.* t. ii., *Bulletin*, pp. lviii, lix.

Note of occurrence of forms new to the district in the Muschelkalk of the neighbourhood of Diekirch. Rectifies a statement in his 'Prodrome d'une description géologique de la Belgique' relative to some greyish-green sandstones which he had there referred to the Grès bigarré series, the fossils they have yielded now showing that they belong to the Muschelkalk. G. A. L.

——. On the Correlation of the Cambrian rocks of Belgium and Wales. Translated from the French, *Bull. Ac. Roy. Belg.* 2 sér. t. xxxvii. no. 5, pp. 596–598, 1874, by **G. A. Lebour,** *Geol. Mag.* dec. 2. vol. ii. pp. 42, 43.

Dewalque, Prof. G., A. Briart, and — **Cornet.** Rapports sur les mémoires concernant le bassin houiller de la province de Liége. [Reports on the memoirs on the Liége Coalfield.] *Bull. Ac. Roy. Belg.* sér. 2, t. xl. pp. 900–974.

Criticise the two memoirs sent in answer to the prize-question requiring a description of the Coal Measures of the Liége Basin.

Dewalque, Prof. G., L. De Koninck, and — **Dupont.** Rapports sur le travail de M. Mourlon concernant l'étage Dévonien des psammites du Condroz dans le bassin de Theux, etc. [Reports on M. Mourlon's paper on the Condroz Sandstone of Theux, etc.] *Bull. Ac. Roy. Belg.* sér. 2, t. xl. pp. 673–678.

Point out the chief new facts contained in M. Mourlon's paper.

Dieulafait, Prof. L. [On the Lignites of the Var.] *Bull. Soc. Sci. Indust. Marseille,* t. ii. p. 126.

These lignites lie between the Lias and Trias, below the *Avicula contorta* zone, which is very constant.

Dieulafait, Prof. L., and — **Hollande.** Existence et développement de la zone à *Avicula contorta* dans l'île de Corse [Presence of the *Av. contorta* zone in Corsica.] *Compt. Rend.* t. lxxxi. p. 506.

Note of an horizon abounding in *Avicula contorta*, which can be traced in an interrupted manner throughout the eastern part of the island; it is best developed in the Corte district. This bed (a shelly marble) had hitherto been grouped with others as belonging to the Nummulitic series. G. A. L.

Doelter, Dr. Cornelio. Die Vulcangruppe der pontischen Inseln. [The Volcanic Group of the Ponza Islands.] *Denkschr. k. Ak. Wiss.* Bd. xxxvi. pp. 141–186.

A notice of the earlier memoirs on these islands is followed by a description of their geographical features. The geology of each of the islands is then described in detail, the rocks of Ponza being classed, on the basis of chemical and microscopical analysis, as Sanidine-plagioclase-trachyte, Sanidine-biotite-trachyte, Rhyolite, Pitchstone, Perlite, Trachyte-breccia, and Tuff; those of Palmarola, as Trachyte-breccia, Sanidine-trachyte, Lithoidite, Obsidian, Perlite, Pitchstone and Rhyolite; those of Zannone, as Rhyolite and sedimentary rocks; those of Ventotene, as Basaltic lava and Tuff; and those of Santo Stefano, as Trachytic lava and Tuff. The peculiar forms resulting from the contraction of the rock masses are described; and a detailed account is given of the relations which the various kinds of rocks bear to one another. It is shown that the great eruptive vein-like masses which traverse the agglomerates in Ponza affect a radial arrangement, and point to two centres of eruption, in a similar manner to the eruptive masses of the Euganean Hills. The rocks of Ponza, of which several new analyses are given, present interesting points of resemblance to those of the Lipari Islands and the Euganean Hills. J. W. J.

——. Vorläufige Mittheilung über den geologischen Bau der pontinischen Inseln. [The Ponza Isles.] *Sitz. k. Ak. Wiss. Wien, mat.-nat. Cl.*, 1 Abth. Bd. lxxi. pp. 49–56 (with woodcut), also *Boll. R. Com. geol. Ital.* pp. 154–162.

Divided into two groups: the two eastern isles Ventotene and St. Stefano are similar in structure to the volcanoes of the Phlegrean Fields, consisting of lava with tuffs; the western, Ponza, &c. to the Transylvanian trachyte volcanoes, consisting of trachytes and radiating rhyolite dykes, which at the contact with the trachyte-breccias produce pitchstone. E. B. T.

——. Der geologische Bau, die Gesteine und Mineralfundstätten des Monzonigebirges in Tyrol. [Geological structure, &c. of the Monzoni district, &c.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 2, pp. 207–246, with 2 plates of sections, map, and 3 cuts. See also *Verh. k.-k. geol. Reichs.* pp. 81, 82.

Describes the varied igneous rocks, the name "Monzonite" being applied to numerous varieties between Diorite and Syenite; some contain augite, others hornblende; hornblende is also found in some of the melaphyres. The localities for the minerals are mostly at the junction with the limestone, the contact being of great influence. E. B. T.

Dollfus, G. Note géologique sur les terrains crétacés et tertiaires du Cotentin. [Cretaceous and Tertiary beds of the Cotentin.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 460–477, with folding table and 4 figs. in text.

The Cretaceous series is represented by two members only, Greensand with *Orbitolina,* and *Baculite*-limestone, on which latter rests the Tertiary series, the lowest division present being the Middle Eocene. Gives the following list of the Tertiary subdivisions of the Cotentin, compared with British deposits:—

		Cotentin.	*Britain.*
Pliocene	Upper	1. *Nassa* marls	Chillesford sands
	Lower	2. *Terebratula* conglomerate	Red Crag Coralline Crag ? ?
Miocene	Upper	wanting	wanting
	Middle	3. Fahlun, with Bryozoa	wanting
	Lower	wanting	wanting
Oligocene	Upper	4. *Potamides* limestone	Bovey-Tracy lignites
	Middle	5. *Bithynia* marls	Hempstead Series
	Lower	6. *Corbula* clay	Bembridge Series
Eocene	Upper	wanting	Osborne Series
		wanting	Headon Series
	Middle	7. Geodic limestone	Barton Clay
		8. Orbitolites limestone 9. Nodular limestone	Bracklesham Series
	Lower	wanting	Bognor Series & London Clay
		wanting	Plastic Clay & Woolwich Beds
		wanting	Newhaven Sands & Thanet Sands

G. A. L.

Dorn, —. Neue württembergische Salinen. [New Salt Deposits in Würtemberg.] *Jahresh. Ver. Nat. Württ.* Bd. xxxi. p. 165.

Douvillé, H., and **— Jourdy.** Note sur la partie moyenne du terrain jurassique dans le Berry. [Middle Jurassic in the Berry.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 93–112, with folding table.

The beds described are between the *Exogyra-virgula* marls and the *Ammonites-coronatus* limestones, and consist (in descending order) of:— 1. *Astarte* limestones; 2. Upper lithographic limestones; 3. Chalky limestone; 4. Lower lithographic limestones; 5. Marls and limestones, with sponges; 6. Marls, with pyritous ammonites. Of these divisions, 1 = L. Kimmeridgian, 2 and 3 = U. Corallian, 4 = M. Corallian, 5 = Argovian. The Oxfordian, altogether wanting in the Indre, is represented in the Cher, Nièvre, Yonne and Haute-Marne. One of the chief points is the intercalation of the Argovian (Calcareous Grit of British geologists) between the Oxfordian and the Corallian. G. A. L.

Ducrost, —, and **— Arcelin.** Les fouilles de Solutré. [The Solutré Excavations.] 20 pp., *Mâcon.*

A letter to M. Chabas.

Dumas, Em. Note sur la *Panopœa Aldrovandi* découverte à l'état subfossile dans l'ancien cordon littoral de la Méditerranée. [On *P. Aldrovandi* found subfossil in the old shore line of the Mediterranean.] 11 pp., 2 plates, *Montpellier.*

Dupont, E. Sur le Calcaire carbonifère entre Tournai et les environs de Namur. [Carboniferous Limestone between Tournai and Namur.] *Bull. Ac. Roy. Belg.* 2 sér. t. xxxix. pp. 264–311, 2 plates of sections.

A detailed stratigraphical description of the Carboniferous Limestone Series in this region. Of the subdivisions recognized by the author in the Dinant district, only i., v., and vi. are present here; and of these i. is reduced from 150 to 20 metres in thickness, all its parts being however distinct in an atrophied condition. Detailed coloured sections of all the localities mentioned are given. G. A. L.

Dupont, [E.], — Nyst, and A. Briart. Rapports sur un travail anonyme concernant les dépots littoraux de l'assise panisélienne dans les environs de Bruxelles. [Reports on an anonymous paper on the Littoral Deposits of the Paniselian, near Brussels.] *Bull. Ac. Roy. Belg.* sér 2, t. xl. pp. 678–684.

The chief point brought forward in the paper appears to be the reference to the Paniselian series of certain gravels (at Schaerbeek, Saint-Gilles, and Uccle) hitherto generally considered Bruxellian.
G. A. L.

Durand, H. The Channel Tunnel. *Coll. Guard.* vol. xxix. p. 262.

Translation of a paper in the *Annales Industrielles.* An account of the preliminary steps taken with the object of bringing about the proposed tunnel. G. A. L.

Ébray, Th. Sur la dénudation du Mont-Lozère. [On the Denudation of Mont-Lozère.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 281–284.

Believes it imprudent to assert that the Jurassic seas once covered *all* the hills of the Lozère, although it is possible that they did so.

——. Étude de quelques gisements de pierres lithographiques au point de vue de la formation d'une compagnie d'exploitation. [On some deposits of Lithographic Stone, from an industrial point of view.] 8 pp., *Geneva.*

Eck, H. Ueber die Umgegend von Oppenau. [Geology of the country around Oppenau.] *N. Jahrb.* Heft i. pp. 70–72.

At a meeting of the Geological Society of the Upper Rhine at Freiburg i. Br., Dr. Eck submitted his map of the neighbourhood of Oppenau, in the Black Forest. This essay is an abstract of his remarks descriptive of the map, and contains corrections of the views of previous observers. F. W. R.

Erdmann, E. De allmännaste af Sveriges berg- och jord-arter, lättfattligt beskrifna hufvudsakligen med afseende på deras användande inom landthushållningen. [The commonest rocks and Quaternary deposits of Sweden, popularly described, with special reference to their use in agriculture.] Ed. 2, 120 pp., 24 figs. in text. 8vo. *Stockholm.*

Fabre, G. Sur une Carte géologique, minéralogique et agronomique du Canton de Mende. [On a geological, mineralogical, and agricultural Map of the Canton of Mende.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 431–434, with folding table.

Description of a manuscript map on a scale of $\frac{1}{20000}$. The Table forms the explanation of the map, and is divided into three parts, Geological, Mineralogical, and Agricultural. The first part is divided into columns, headed:—1, formations; 2, stages; 3, sub-stages; 4, distinctive signs; 5, mean thickness; 6, principal fossils. The second part into columns, headed:—1, nature of the rocks; 2, accidental minerals; 3, local names; 4, materials of economic value. The last part has five divisions, amongst these Permeability of the sub-soil; and Nature of the soil. G. A. L.

——. Matériaux pour servir à la description géologique du département de la Lozère. [Geological description of the Lozère.] 11 pp., 1 plate, *Mende.*

Two papers, nos. 6 and 7 of the series. 6 consists of observations on the geology of the commune of Saint Chély-du-Tarn. 7 discusses the antiquity of iron-working in the region of the Causses. G. A. L.

Falsan, A. Études sur la position stratigraphique des Tufs de Meximieux, de Péronges et de Montluel. [Stratigraphical position of the Tuffs of Meximieux, &c.] 4to, pp. 38, 1 plate, *Lyons, Geneva,* and *Bâle.*

——. Introduction Stratigraphique to "Recherches sur les Végétaux Fossiles de Meximieux," by MM. de Saporta and M. A. F. Marion. *Arch. Mus. Lyon,* t. i. livr. 4, pp. 131–184.

A detailed description of the stratigraphical position of the '*Tufs*' of Meximieux, of Péronges and of Montluel. Lists of the fossils found in the various deposits are given, and a synoptical table of sections of Tertiary and Quaternary beds in the Rhone Basin. (See **Saporta,** under PALÆONTOLOGY, PLANTS.) E. T. N.

Favre, Prof. Ernest. Recherches géologiques dans la Partie Centrale de la chaîne du Caucase. 4to. *Geneva, Basle,* and *Lyons.* Pp. viii, 118; 2 plates (sections and geological map), 32 woodcuts.

Gives the results of two journeys. Crystalline rocks occur in two areas, one forming the central axis of the chain, the other forming the nucleus of the Mesque Mountains. Sedimentary rocks are represented by Palæozoic schists (not Jurassic, as maintained by Abich); by sandstones and marls of Lower Jurassic age, and by Upper Jurassic Limestones; by Cretaceous beds of Neocomian, Aptian, and Senonian age; by Nummulitic limestone and Miocene beds; and by Quaternary deposits, including the Tschernoï-sjem. The most important volcanic rocks of the Caucasus were erupted at the close of the Tertiary period, but have produced only local effects in the upheaval of the chain.

F. W. R.

Favre, Prof. Ernest. Sur la géologie de la partie centrale de la chaîne du Caucase. [Geology of Central Caucasus.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 59–68.

A summary of researches as given in detail in the above.

——. Revue géologique Suisse pour l'année 1874. [Swiss Geological Review for 1874], t. v. 62 pp. *Geneva, Bâle,* and *Lyons.* Also *Arch. Sci. Phys. Nat.* t. lii. pp. 265–319.

Notices of all books and papers relating to the geology of Switzerland and the immediately adjoining countries published in 1874.

Feistmantel, Dr. O. Vorbericht über die Perucer Kreideschichten in Böhmen und ihre fossilen Reste. [On the Cretaceous Shales of Peruci in Bohemia and their Fossils.] *Sitz. k. böhm. Ges. Wiss.* (1874 vol.) pp. 254?

Fessel, H. Beschreibung des Manganerzbergbaues zu Vigunsca. [The Manganese Ore Mines of Vigunsca.] *Zeitsch. berg-, hütt. Ver. Kärnthen,* Nr. 21 and 22.

Firket, Ad., and **L. Gillet.** Note sur le soufre natif de l'argile plastique d'Andenne. [Native Sulphur of the Plastic Clay of Andenne.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires,* pp. 178–182, 2 figs. in text.

Note of occurrence at Froidebise, near Haltiune, in the commune of Andenne. The writers admit and quote Bischof's explanation of the origin of similar deposits of native sulphur in clays (decomposition of hydrosulphuric acid). G. A. L.

Flahaut, —. Les Alluvions de la Lys à Comines. [Alluvial beds of the Lys at Comines.] *Ann. Soc. Géol. Nord,* t. ii. pp. 66–69.

Four sections of alluvial sands and clays are given.

Fliche, P. Sur les lignites quaternaires de Jarville, près de Nancy. [Quaternary Lignites of Jarville, near Nancy.] *Compt. Rend.* t. lxxx. pp. 1233–1236.

Describes a thin bed of lignite lying on Lias, and overlain by gravel containing remains of *Elephas primigenius*; it is a brown peaty bed full of animal and vegetable débris. Lists of the species found are given. The character of its remains is much more *boreal* than that of the Norfolk forest-bed fossils. G. A. L.

Foster, P. Le N., Jun. Coal Mining in Italy. *Rep. Miners' Assoc. Cornwall*, for 1874 and part of 1875, pp. 40–45.

Refers to Miocene coal deposits in the Tuscan Maremma. The Basin of Monte Bamboli contains two seams of coal respectively 2 feet and 4 feet thick. At the Casteani mines, in the Val di Bruno Basin, one of the seams is nearly 20 feet thick, about half of which is coal of first quality. The yearly output of these mines averages 20,000 tons. [Paper noticed in GEOLOGICAL RECORD for 1874, p. 62.] C. L. N. F.

Fuchs, Dr. C. W. C. Die Umgebung der Meran: ein Beitrag zur Geologie der deutschen Alpen. [Geology of the neighbourhood of Meran.] *N. Jahrb.* Heft viii. pp. 812–848; with chromo-lithograph map.

A geological description of the country around Meran and the Etsch Valley in S. Tyrol. The form of the ground is first described, and then the geological characters in detail. The crystalline silicated rocks of the middle Alpine zone are represented by the gneiss and phyllite formation. Then comes the Quartz-porphyry of the S. Alpine zone. The oldest sedimentary rocks appear to be Permian; and these are followed by L. Triassic rocks. The Drift and Alluvium are also described. The folding map is contoured, and on a scale of 1 : 36,000. F. W. R.

Fuchs, Th. Die Gliederung der Tertiärbildungen am Nordabhange der Apenninen von Ancona bis Bologna. [Tertiaries N. of the Apennines.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.*, 1 Abth. Bd. lxxi. pp. 163–178. Also *Boll. R. Com. geol. Ital.* pp. 245–259.

Correlates these Tertiaries with those of other localities: thus the lowest, Monte Titano beds, are paralleled with the Schio, and lower beds of Malta (Oligocene or L. Miocene); the Molasse marls with the 'Schlier' or first Mediterranean stage. The Tortonian includes marls, sands, &c. representing the Baden clays (second Mediterranean stage). Unconformably to these succeed the sulphur and gypsum freshwater beds, which form the base of the Pliocene, and are compared to the Vienna Congeria-beds. Above come the well-known Pliocene blue marls with gasteropods, and then yellow sands with oysters, scallops, &c. E. B. T.

——. Der Eisenbahn-Einschnitt der Franz-Josef-Bahn bei Eggenburg. [Railway-section at Eggenburg.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 1, pp. 17–19 (with a folding plate).

A large-scale section shows the details of the beds opened up by the railway.

——. Neue Brunnengrabungen in Wien und Umgebung. [Well-sections, Vienna.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 1, pp. 19–62, and *Verh. k.-k. geol. Reichs.* pp. 35–36.

Of 119 well-sections here given only 1 is superficial, the others reaching different members of the Vienna Tertiaries: the number of faults precludes any certain calculation as to the depth of water-bearing strata; the deepest well is about 360 feet. Fossils from the various beds sunk through are named. E. B. T.

Fuchs, Th. Die Tertiærbildungen von Stein in Krain. [The Tertiary formations of Stein, Illyria.] *Verh. k.-k. geol. Reichs.* pp. 48, 49.

Rocks and fossils from Stein show that the following beds are there developed:—below, Sotzka beds (Aquitanian); above, two divisions of the Mediterranean stage, the lower (Horn beds) being much more nearly allied to the upper than to the Sotzka beds below. E. B. T.

——. Zur Bildung der Terra Rossa. [On *Terra Rossa.*] *Verh. k.-k. geol. Reichs.* pp. 194–196.

Supplementary to Prof. Neumayr's paper: notices its large development in Greece, where it is derived from freshwater limestones. Hence it is always due to *Globigerina* remains, and the climate of the country has more to do with its formation than the nature of the limestone. E. B. T.

——. Sulla Relazione di un Viaggio geologico in Italia. *Boll. R. Com. geol. Ital.* pp. 237–240.

(From the German.) In reply to Prof. Seguenza (see p. 97).

Fuchs, Th., and **Al. Bittner**. Die Pliocænbildungen von Syrakus und Lentini. [Syracuse Pliocene.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. i. Bd. lxxi. pp. 179–188 (with woodcut); also *Boll. R. Com. geol. Ital.* pp. 288-293.

Describes the Pliocene of several localities near Syracuse; it lies unconformably on the Leitha limestone. That of Lentini corresponds with the beds at Tarento, consisting above of (1) Bryozoa sandstone; below (2) blue plastic marls; below which are (3) Bryozoa sands with corals. Lists of fossils in these divisions are given. E. B. T.

Fusch, —. [Report on the Marly Concession (S. of the Valenciennes coal-field.)]. *Privately printed.*

Garnier, Jules. [Iron near Brest.] *Rev. Géol.* t. xi. pp. 76, 77.

The ironstone deposits are found in Devonian rocks, and consist of geodic iron-ore.

——. [Iron-ores of Brittany.] *Rev. Géol.* t. xii. pp. 91, 92.

Describes a deposit of white ironstone (analysis given), locally called "blandin," and associated with pockets of hæmatite worked in an horizon of Silurian schists running from Glénac (Morbihan) to Renac (Ille-et-Vilaine). G. A. L.

Garrigou, Dr. —. Sur les causes géologiques de l'affaissement du tunnel de Sarrouilhes. [Geological causes of the falling in of the Sarrouilhes Tunnel.] *Bull. Soc. Hist. Nat. Toulouse,* t. viii. pp. 377–379.

——. Course à St. Béat. [Excursion to St. Béat.] *Bull. Soc. Hist. Nat. Toulouse,* t. viii. p. 418.

Geological notes with special reference to the St. Béat marbles, which the writer holds to be Carboniferous, and the representatives in the Pyrenees of the statuary marbles of the Apuan Alps. [See GEOLOGICAL RECORD for 1874, pp. 65–78.] G. A. L.

Gastaldi, Prof. B. Sui fossili del calcare dolomitico del Chaberton (Alpi Cozie) studiati da G. Michelotti. [Dolomitic Limestone of Chaberton, &c.] *Boll. R. Com. geol. Ital.* pp. 316–355, plate.

Retracts his opinion on the age of the Carrara limestone. Cites a letter from Michelotti respecting fossils in the dolomitic limestone of Chaberton, supposing this to be Lower Palæozoic; the fossils, which are somewhat obscure, are here figured. E. B. T.

Geinitz, Eugen. Ueber neue Aufschlüsse im Brandschiefer der unteren Dyas von Weissig bei Pillnitz in Sachsen. [New sections of the Lower Permian Bituminous Schists of Weissig, near Pillnitz, in Saxony.] *N. Jahrb.* Heft i. pp. 1–14, with plate of fossils.

A shaft has been carried in search of coal to a depth of more than 130 ells [284 feet]. A section is given of that part of the shaft which passed through the bituminous schists. These have yielded many fish remains and other fossils, which are described elsewhere (see *post*, under PALÆONTOLOGY). F. W. R.

Giesler, E. Das oolithische Eisensteinvorkommen in Deutsch-Lothringen. [The Oolitic Iron-ores of German Lorraine.] *Zeitsch. Berg-, Hütt. Salinenw.* vol. xxiii. pt. 1, pp. 9–41. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. p. 358.

These ores occur in the limestones, at the top of the Upper Lias or bottom of the Inferior Oolite, over a length of country from N. to S. about 32 miles, from the S. frontier of Luxemburg, near Thionville, to the Moselle valley S. of Metz. The thickness of the formation diminishes from 82 feet on the N. to 10 feet on the S., and with it that of the associated beds of iron-ore, there being 4 workable beds, the principal one from 13 to 16 feet thick, besides several smaller beds in the N. part of the district, while in the centre there are only 2 beds, about 7 feet together; in the extreme S. only the lower bed, with an unworkable thickness of 3 feet, is known. The beds of ore are made of close alternations of limonite with bands of limestone and marl. The ore is known by the name of Minette, and is made up of oolitic grains varying in the proportion of iron from 30 to 40 p. c., with considerable variation in the amount of phosphorus, from 0·5 to 2 p. c. This part of the subject is illustrated by a table containing the results of 156 analyses. H. B.

Gintl, Dr. H. Das Petroleum- und Ozokerit-Territorium Galiziens. [The Petroleum and Ozokerite district of Galicia.] *Mitth. k.-k. geogr. Ges. Wien*, Bd. xviii. pp. 230–232.

Girard, J. Les soulèvements et dépressions du sol sur les côtes de la France. [Rising and sinking of the Land on the Coasts of France.] *Bull. Soc. Géogr. Paris*, sér. 6, t. x. pp. 225.

Gosselet, Prof. J. L'Étage éocène inférieur dans le Nord de la France et en Belgique. [L. Eocene in Northern France and in Belgium.] *Bull. Soc. Géol. France*, 3 sér. t. ii. pp. 598-617 (6 figs. in text).

The correlation of the beds is thus tabulated (p. 616):—

N. part of Paris Basin, *Suessonian.*	Dépt. du Nord and Belgium. Clay of Flanders.	England.
Sands of Bracheux, lower part	Heersian sand & marls. Clay of Louvil. "Tufeau" of Angres. Clay with flints?	Thanet Sands.
Sands of Bracheux, upper part	Sands of Ostricourt { Clay of Clary. ,, of Englefontaine ,, of Bourlon.	Lower Woolwich Sands.
Plastic clay and Soissonnais Lignites ...	.... Clay of Orchies ...	Upper Woolwich Sands. Oldhaven Series.
Sands of Cuise	Sands of Mons-en-Pévèle. Clay of Roubaix	London Clay.

G. A. L.

——. Sur les calcaires dévoniens du Nord de la France. [Devonian Limestones of N. France.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 356–358.

Résumé of the writer's work in filling up the lacunæ in the Devonian series, which it was thought existed on the northern side of the Palæozoic basin of Dinant or Avesnes, as compared with the development of that series on its S. side. G. A. L.

——. Sondage à Marquette. [Boring at Marquette.] *Ann. Soc. Géol. Nord*, t. ii. p. 70.

Account of a boring reaching the *tun* at 62 metres.

——. Documents nouveaux sur l'allure du Terrain houiller au sud du Bassin de Valenciennes. [Lie of the Coal Measures S. of the Valenciennes Basin.] *Ann. Soc. Géol. Nord*, t. ii. pp. 113–121, one folding plate.

Brings out the chief geological facts contained in two mining reports, one by M. Fusch on the Marly concession, and the other by M. Olry on that of Crespin. While accepting all the facts stated by these authors, the writer differs in the interpretation of some of them. Faults and reversals on a large scale render this district very complicated; but by means of ideal and true sections the arrangement of the beds is rendered intelligible. [See **Fusch** and **Olry**, pp. 65, 87.] G. A. L.

——. Observations sur les sables d'Anvers. [The Antwerp Sands.] *Ann. Soc. Géol. Nord*, t. ii. pp. 129–134.

The succession of these sands seen was as follows, in ascending order:— Zones of 1, *Panopea Menardi*; 2, *Pectunculus pilosus*; 3, *Terebratula grandis*; 4, *Isocardia cor*; 5, *Pecten pusio*; 6, *Fusus antiquus*. 4 and

5 are supposed by M. Cogels to be different facies of the same zone. A section at the brick-works of Tamine and Ruppelmonde is given. Suggests that some sands there may be Diestian, in which case the terms Diestian and Scaldisian would be synonymous. G. A. L.

Gosselet, Prof. J. Le terrain dévonien des environs de Stolberg (Prusse). [Devonian of the neighbourhood of Stolberg, Prussia.] *Ann. Soc. Géol. Nord*, t. iii. pp. 8–16.

Gives in detail the section exposed by the stream of Vicht near Stolberg, showing a complete series of beds from the Carboniferous Limestone to the Silurian. The Devonian beds belong to the following divisions, in descending order:—1, Condroz sandstones; 2, Famenne schists; 3, Givet Limestone (*Calceola* schists wanting apparently); 4, Grauwacke (Coblentzian); 5, Gedinne schists (Gedinnian). Altogether this series is very like that of the eastern border of the Palæozoic basin of Dinant. In some matters of detail the author is able to correct Kayser, especially with regard to a limestone subordinate to the Famennes division, which both Kayser and Roemer had referred to the Eifel series. G. A. L.

Grad, Ch. Le massif des Vosges et les restes de ses anciens glaciers. [The Vosges and the remains of its old Glaciers.] *Club alp. Franç.* 1ère an. p. 308.

Grand, Albert. Etude sur le bassin houiller des Asturies (Espagne). [The Coal-basin of the Asturias.] 64 pp., one map. *Paris.* Abstract in *Coll. Guard.* vol. xxx. p. 229.

This paper was originally read before the Paris Soc. of Engineers.

Guillier, Albert. Note géologique sur le Belinois. [Geology of the Belinois.] *Bull. Soc. Agr. Sci. Sarthe*, 15 pp., 1 plate.

Gumælius, O. Om malmlagrens åldersföljd och deras användande såsom ledlager. [Age of the Iron-ores and their use as guiding beds.] *Œfvers. k. Vet. Akad. Förhandl. Stockholm*, pp. 30.

A description of the rocks and iron-ores in a certain district of the province of Nerike, Sweden. An attempt is made to classify the ores in separate groups according to their age, and to show that each group is accompanied by its own rocks. The following groups are enumerated:—Red gneiss, grey gneiss, red eurite, grey eurite, mica-schist, and hälleflinta, which latter is the youngest. The paper is accompanied by a coloured geological map of the district. E. E.

Gümbel, C. W. Abriss der geognostischen Verhältnisse der Tertiärschichten bei Miesbach und des Alpengebiets zwischen Tegernsee und Wendelstein. [Bavarian Tertiaries and Alpine geology.] 8vo. *Munich.* Pp. 76; 2 maps.

Sketch of the geology of part of the Alps visited by the German Geological Society at the Munich meeting, 1875; with a geological map of part of the Bavarian Alps on a scale of 1: 50,000, and a special map of the Miocene and Oligocene Molasse in the Leitzach Thal, near Miesbach. F. W. R.

Hantken, Max von. Neue Daten zur geologischen und palæontologischen Kenntniss des südlichen Bakony. [Notes on the S. Bakony-wald.] *Mitth. Jahrb. k. ung. geol. Anst.* iii. Lief. 3, pp. 339–371, with 4 plates.

1. The Urkut Tertiary beds contain a 5 ft. coal-bed; fossils prove these to belong to the M. Eocene, as *N. lævigata*, &c. are common to the Calcaire Grossier. 2. The Nummulite beds of the western division of this part of Hungary have a different facies from that of the eastern; in the latter the species of *Nummulites* each characterize a special horizon, *e. g. N. lævigata* the upper part, *N. spira* the middle, and *N. Tchihatcheffi* the lower; lists of other fossils are given. The following n. sp. from the M. Eocene are described:—*Cardium Wiesneri*, *Perna Urkutica*, *Cerithium Fuchsi*, *Natica cochlearia*, *Myliobatis superbus*; from the Cretaceous, *Globiconcha Baconica*. E. B. T.

Harting, P. Le Système Eemien. *Arch. Néerl. Sci. Ex. Nat.* t. x. livr. 5, pp. 443–454.

Hauchecorne, H. Die kohlenführenden Bildungen in der Provinz Schonen und auf der Insel Bornholm. [On the Coal-bearing Strata of Scania and the Island of Bornholm.] *Zeitsch. Berg-, Hütt. Salinenw.* xxiii. pt. 1, pp. 72–88. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 340, 341.

The formation, which is assigned to the Lias by Forchhammer and to the *Avicula contorta* series by Hébert, occurs at several points along the S.W. coast of Sweden, the most important locality being in the basin of "Höganas," which probably covers about 250 square miles. The strata consist of alternations of sandstones with shales and clays, varying in thickness from 100 feet on the E. to about 800 on the W. side of the basin, with two seams of coal, the upper being about a foot thick, and the lower about 4½ feet, half of which consists of black shale partings. The underclay of the main seam is a good fire-clay, and is largely used for brick-making and pottery. About 150 tons of coal are raised daily, a large proportion of which is consumed in the brick and pottery kilns. Near Helsingborg similar strata have been bored through at greater depths with increased thickness of coal, which Erdmann considers to be a local thickening of the Höganas seams towards the bottom of the basin. In the Island of Bornholm similar coal-bearing beds, probably Liassic, form a narrow belt along the S. and S.W. coasts, containing 10 seams of coal from 8 to 30 inches thick, which are scarcely workable, being much disturbed and of inferior quality. It is considered, however, that these Secondary coal strata may extend under the Baltic plain into Pomerania, and a deep boring to prove this point has been undertaken by the Prussian Government at Kammin, 40 miles north of Stettin. H. B.

Hauer, Franz Ritter von. Die Geologie und ihre Anwendung auf die Kenntniss der Bodenbeschaffenheit der österr.-ungarischen Monarchie. [Geology and its application to a knowledge of the Austro-Hungarian Monarchy.] 8vo. *Vienna.* Pp. viii, 681; with 658 figs.

A Text-book of Geology and its applications, with special reference to the Austro-Hungarian Monarchy. Part 1, on General Geology, contains the following chapters:—The earth, its crust, and its interior; chemical and mineralogical constituents of the earth's crust; rocks; formation of the earth; alteration of the earth's crust, or Dynamical Geology; age of rocks, fossils and geological formations, or Historical Geology. Part 2, on Descriptive Geology, notices all the formations in ascending order. The special characteristic of the work is that all the illustrations, sections, fossils, &c. are taken from local sources. F. W. R.

Hébert, Prof. Observations sur les tableaux de M. Renevier. [Remarks on Prof. Renevier's Tables.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 15, 16.

1. Asserts that the limit between the Eocene and Miocene is to be found between the Nummulitic fauna of the Hautes-Alpes and that of Castel-Gomberto (= Fontainebleau sands). 2. Denies that the Vraconian stage is a natural group. G. A. L.

——. Observations sur le travail de M. Pillet relatif à la colline de Lémenc. [Remarks on M. Pillet's work on the Lémenc hill.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 387, 388.

Urges that M. Pillet is wrong in regarding the *Diphya-Kalk* as older than the *Terebratula Moravica* deposits.

Hébert, Prof. E., and A. Toucas. Description du bassin d'Uchaux. [Cretaceous Basin of Uchaux.] *Ann. Sci. Géol.* t. vi. livr. 1, pp. 112, 1 plate of sections and woodcuts in text (for Appendix on fossils see *post*, PALÆONTOLOGY). [See also GEOLOGICAL RECORD for 1874, p. 72.]

The N. and E. part of this basin in Vaucluse is described by M. Hébert, the S. and W. by M. Toucas, and the central by them jointly, the memoir being one of a series on the Upper Cretaceous of France; the beds above the Gault are alone considered in detail, those with *Hippurites cornu-vaccinum* being the upper limit. The U. Cretaceous basins in France are noticed, and certain palæontological lines common to them pointed out. The general section in the Uchaux district is:—1. Mondragon grits, 140 metres thick; *Turrilites Bergeri, Amm. Rhotomagensis,* &c.=Cenomanian; 2. Calciferous grits of Uchaux, 169 m. (=Turonian), *Amm. peramplus, papalis,* &c.; 3. Mornas grits, 296 metres, *Sphærulites,* &c.; 4. Hippurite limestone, 15 metres; 5. Piolenc lignites, 60 metres. These groups are further broken into smaller divisions, lists of fossils being given; and they are paralleled

with beds in the other French basins, the results being presented in tabular form. It is held that there has been no proved passage between the Gault and the glauconitic Chalk (Cenomanian), but that in the supposed instances the Gault fossils are derived. Lastly, the movements of the ground and the physical relations of the beds are discussed.
E. B. T.

Helmhacker, Dr. R. Ueber das Alter der Pilsner Cannelkohle. [Age of the Cannel Coal of Pilsen.] *Jahrb. k.-k. Bergakad.* Bd. xxiii. pp. 243–277.

Discusses the views recently adopted as to the age of the cannel coal occurring in the uppermost part of the Pilsen coal-field, which had been assigned to the Permian as a new subformation, Kohlen-Rothliegende or lowest Permian. Analyzes the evidence of the plants and animals found in association with this coal, and concludes that, with some portion of the overlying strata, it forms part of the Coal Measures. H. B.

Hennequin, Capt. E. Carte géologique de l'Europe, à l'échelle du 8,000,000^e, établie pour faciliter l'étude de la géologie générale, et pour servir au développement des connaissances ordinaires de géographie. Notice explicative. [Explanatory notice of a Geological Map of Europe (see *post*)]. 28 pp. *Brussels.*

Gives explanation of colours and signs used in the map, and reasons for publishing it. The map is specially meant as a help to the study of general geology from text-books. G. A. L.

Hill, Rev. J. S., and W. Fairley. The Coal Measures of the Kingdom of Saxony. *Coll. Guard.* vol. xxix. pp. 193, 225, 261, 297, 333, 369, 407, 443, 482, 517, 553, 589, 625; plates.

An account "translated and edited from the German." The subject is treated under the following heads:—1. The Coal Basin of Hainichen and Ebersdorf, in the region of the Culm. 2. The productive Coal Measures of the Zwickau-Chemnitz Basin, with a table of collieries. 3. The Coal Formation of Flöha and Gückelsberg. 4. The Anthracite of the Upper Erzgebirge, and at Brandau, in Bohemia, with a transverse section in text. 5. The Coal Formation of the Plauen Territory, near Dresden, with 4 transverse sections. G. A. L.

——, ——. The Coal Beds of the Prussian Province of Saxony in the southern border of the Harz, in the Thuringian Forest, and the Bavarian Upper Palatinate. *Coll. Guard.* vol. xxx. pp. 599, 637, 675–677, 713, 714, 753, 754, 793, 833–835, 872, 914, 951, 1002; 6 plates, and figures in text.

This paper, "translated and edited from the German," is divided into the following sections:—1. The occurrence of coal in the Prussian Province of Saxony, near the town of Wettin, and Löbejün in the Saal circle, and the village of Plötz in the Bitterfeld circle, Government Merseburg, Chief Mining District of Halle on the Saal, by Herr

Wagner, Imperial Mining Inspector of Wettin. 2. The Coal Formation in the neighbourhood of Ilfeld, in the province of Hohenstein, on the southern border of the Hartz Mountains. 3. The Mineral Coal of the Thuringian Forest. 4. The Coal Formation of Stockheim and Neuhaus, by Herr C. Rückert. G. A. L.

Hoernes, Dr. R. Ein Beitrag zur Gliederung der österreichischen Neogenablagerungen. [Austrian Neogene Deposits.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 631–645.

Discussion of the classification of the Neogene deposits of the Vienna Basin, in the following order:—1. Sotzka beds; 2. First Mediterranean stage; 3. Second Mediterranean stage; 4. Sarmatian stage; 5. Pontine stage. The last-named division includes the *Paludina*-beds, which have formed the subject of Paul and Neumayr's palæontological researches in support of evolution. F. W. R.

——. Vorlage der Karte des oberen Vilnöss- und unteren Enneberg-Thales. *Verh. k.-k. geol. Reichs.* pp. 122, 123.

Preliminary notice of work among the Trias beds of Villnös and Enneberg valleys.

——. Das Kohlenvorkommen von Drenovec in Croatien. *Verh. k.-k. geol. Reichs.* pp. 158, 159.

Notes on the beds and lignites in a shaft sunk at Drenovec in Croatia: middle Tertiary age.

——. Süsswasserschichten unter den sarmatischen Ablagerungen am Marmorameere. [Freshwater beds below the Sarmatian at the Sea of Marmora.] *Verh. k.-k. geol. Reichs.* pp. 174, 175.

Notice of beds with *Melanopsis* below the Sarmatian *Mactra*-limestone. Similarly near Troy marls with the same fossils were found below the limestone with *Mactra Podolica.* E. B. T.

——. Die Fauna des Schliers von Ottnang. [Fossils of the "Schlier," &c.] *Verh. k.-k. geol. Reichs.* pp. 209–212.

Preliminary note: the Schlier represents the marl facies of the older Mediterranean stage, constituting its upper part.

——. Zur Genesis der Südtiroler Dolomite. [Origin of S. Tyrolese Dolomites.] *Verh. k.-k. geol. Reichs.* pp. 290–292.

A preliminary notice.

——. Aufnahme im oberen Rienzthale und der Gegend von Cortina d'Ampezzo. [The Cortina district, &c.] *Verh. k.-k. geol. Reichs.* pp. 224–226, and *Boll. R. Com. geol. Ital.* pp. 296–298.

Notes with localities for Permian, Wengen dolomites, Dachstein limestone, Lias, Jurassic, and Neocomian beds in the districts cited.

——. Aufnahmen in Sexten, Cadore, und Comelico. *Verh. k.-k. geol. Reichs.* pp. 266–269, and *Boll. R. Com. geol. Ital.* pp. 378–381.

Notices a change in the Schlern dolomite on the E. towards the Antelao, the presence of *Fusulina* in limestone blocks included in the

Verrucano, and the occurrence of copper-ores in Palæozoic (?) schists at Monte Avanza. Mentions warm springs depositing tufa as issuing from the *Bellerophon* limestone. E. B. T.

Hoernes, Dr. R. Zur Leithakalkfrage. [The Leitha Limestone question.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 1, pp. 7–17, with 2 woodcuts.

Gives section at Möllersdorf, where the limestone is a band in Baden clay, and agrees with the opinion that it is a strand-facies of the deeper-water clay, and thins out from round the edge of the basin. E. B. T.

——. Die Langkofelgruppe in Südtirol. [The Langkofel group in S. Tyrol.] *Zeitschr. deutsch. österr. Alpenver.* Bd. vii. Heft 1.

The summit of the Langkofel is shown to be formed of dolomitic limestone belonging to the *Trachyceras Aonoides* zone.

——. Aus den südtiroler Kalkalpen. [The Limestone Alps of S. Tyrol.] *Zeitschr. deutsch. österr. Alpenver.* Bd. vi. Heft 1.

Describes the geological structure of the country round Ampezzo, Buchenstein, Gröden, and Enneberg. Shows that many of the so-called Dolomites are not dolomitic at all, but are formed of true limestone. G. A. L.

Houzeau de Lehaie, A. Compte-rendu de l'excursion du 30 Août [1874] au Mont Panisel. [Excursion to Mt. Panisel.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 554–557.

Concludes from the facts observed:—1. That the *Nummulites planata* beds occur in the Ypresian sand; 2. That the Paniselian is quite distinct from the Ypresian; 3. That the typical Paniselian fauna leads one to consider it the equivalent of part of the Paris Calcaire Grossier; 4. That the Paniselian has probably been covered by more recent Tertiaries. G. A. L.

——. [Notes on the Ypresian near Mons.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* pp. lxiv, lxv.

Notes a local clay band rich in bivalve shells of one species in the Mont Panisel, and impressions of two different species of Lamellibranchs from a well at Hyon. Gives a list of the 12 species of fish from the Ypresian sands of Mont Panisel which he has been able to determine. G. A. L.

Hummel, D. Om Sveriges lagrade urberg jemförda med sydvestra Europas. [Stratified primitive rocks of Sweden compared with those of south-western Europe.] Supplement to the *K. Svenska Vet. Akad. Handl. Stockholm,* pp. 1–68; 4 figs. in text. Résumé in French, pp. 1–9.

Gives an account of these rocks in Sweden, their microscopical appearance and chemical characters, and the order of stratification in some important localities. The author thinks the following order (descending) the most exact:—

Hälleflinta series	Primitive clayslate (Argillite, &c.)	Argillite group.
	Black Halleflinta.	
	Quartzite (white Hälleflinta).	Quartzite group.
	Grey Hälleflinta, with grey "eurite."	
	Red Hälleflinta, with red "eurite."	
Garnetgneiss series	Grey gneisses with so-called "garnetgneiss."	
Magnetite gneiss series	Mixed or alternating red and grey gneisses, often fine-grained and streaky.	
	Red gneisses with magnetite gneisses, and with interstratified grey and green layers.	

Some hints are given as to the relation between these Swedish rocks and similar ones in the Pyrenees, Swiss Alps, Tirol, and Odenwald. A geological index-map (scale 1 : 3,000,000) of the S. part of Sweden is annexed. E. E.

Ilwolf, —, and Prof. Peters. Graz, Geschichte und Topographie der Stadt und Umgebung. [History and topography of Gratz and its neighbourhood.] *48th meeting of the German Naturalists and Physicians in Gratz.*

. Contains the following articles:—**Prof. Peters,** description of the country. In an Appendix are papers by **Prof. Peters,** on the iron-ores and brown coals of Steiermark; by **Const. F. v. Ettingshausen,** on the Brown Coal flora of Steiermark; and by **Profs. Peters** and **Clar,** on the mineral springs of the district. G. A. L.

Inberg, I. J. Bidrag till Uleåborgs läns geognosi. [Contribution to the Geology of Uleåborg län. Finland.] *Helsingfors,* 8vo, 19 pp. 2 figs. in text; 7 plates and a coloured geological map with sections.

A description of the configuration of the land and the nature of rocks and of Quaternary deposits in one of the most northern regions of Finland. The plates show the appearance of the landscape in several parts. In the geological map 14 stratified and plutonic primitive rocks are distinguished. Scale 1 : 800,000. E. E.

Jaccard, A. Un nouveau projet d'alimentation d'eau à la Chaux-de-Fonds. [New scheme of Water-supply at Chaux-de-Fonds.] 18 pp. *Neuchâtel.*

Consists chiefly of geological data.

Jaubert, —. Indications géologiques sur le terrain parcouru dans la première excursion du Club alpin français (section de Gap). [Geological notes on the first excursion of the French Alpine Club. (Gap section.)] *Club alp. Franç.* 1ère an. p. 506.

Jervis, Chevalier W. P. On the Anthracitic Coal of Demonte, near Cuneo, in the Italian Alps. *Min. Journ.* vol. xlv. pp. 871, 899, 927. With additional information. *London.* 14 pp.

A translation (from the *Industriale* of Milan), with additional information, of the work noticed in the Geological Record for 1874, p. 372.

Karrer, F. Wettersteinkalk im Höllenthale. *Verh. k.-k. geol. Reichs.* p. 216.

Note on occurrence of *Gyroporella.*

Kayser, Emmanuel. [Italian geology.] *N. Jahrb.* Heft vii. pp. 731–733.

Letter describing geological observations during a visit to Rome, Naples, I. of Procida, Sicily, and the Lipari Islands. Describes an unfavourable ascent of Etna. Mentions the occurrence of an augitic rock in Lipari and Vulcano; the basic rocks here seem to be older than the acid rocks, the latter enclosing fragments of the former. F. W. R.

Kiesenwetter, — von. [On a Peat-like Formation occurring at Lindenau, near Leipzig, containing a great number of beetles, one or two species of which are now extinct.] *Isis.*

Kjerulf, Prof. T. Islands Vulcanlinier. [Volcanic Lines in Iceland.] *Nyt Mag. Nat.* Bd. xxi. 1 Heft, pp. 147–166, 5 figs.

An endeavour to systematize the lines of fissure accompanying volcanic phenomena in Iceland, as indicated by the position of vents, open fissures, geysers and solfataras, dykes, and the trend of elevations and hollows. The two most distinct lines are N.E. to S.W. and N. to S. Volcanic activity is stated to have moved from E. to W., occupying lines previously formed. A table of recorded eruptions is given, by which the "Heckla line" when in action is shown to have silenced all others. H. M.

——. Om Trondhjem Stifts geologi, og Fossiler fra det Trondhjemske af **W. C. Brögger.** [Geology of the diocese of Trondhjem, with an account of the Fossils.] *Nyt Mag. Nat.* Bd. xxi. 1 and 2 Hefte, coloured map (1 : 80000), by **K. Hanan** and **T. Kjerulf,** 22 figs.

Part 2 of a survey of which part 1, published in 1870, deals chiefly with the younger Palæozoic formations. In ascending order, and with maximum estimated thicknesses in Norse feet (77 = 100 English feet), the stratified formations are:—Basement gneiss; Quartz rock, 1500–2000 ft. (Region 1 of S. Norway); Trondhjem and Röros schists, 6000 ft.; Conglomerate and sandstone series, 4200 ft. (Regions 4, 5, 6); Gula schists, 6000 ft. This Memoir chiefly refers to the last three. These are not constant, one or another occasionally thinning or disappearing. Limestones occur throughout. Fossils (of some 25 kinds, only one of which is specifically determined) are limited to the middle group, and point most nearly to Region 5. The strike of the formations is that of the country, about N.W. and S.E. A median younger tract is deeply bordered towards the coast by Basement gneiss with granite, and partially bordered towards Sweden by the same gneiss and by the Quartz rock. All the formations are irregularly broken through by the following igneous rocks coupled according to age (youngest first):—oligoclase granite, protogine granite; greenstone, gabbro; grey granite, porphyritic granite; serpentine, amphibolite; orthoclase-granite, red granite, and "granite gneiss." Details of some ores of copper and iron are given. They occur in all the formations save the quartz rock, and are stated to be invariably associated with igneous outbursts. H. M.

Klipstein, Dr. A. v. Beiträge zur geologischen und topographischen Kenntniss der östlichen Alpen. [Contribution to a geological knowledge of the E. Alps.] Bd. ii. 2 Abth. 4to, 93 pp., 2 plates. *Giessen.*

Contains papers on the following subjects:—1. On the Gerlos and Krimml district; 2. Ahrenthal; 3. The Campil valley and its neighbourhood; 4. The mountains between Corfara and the Livinalongo; 5. On the eastern part of the Montenegro chain and on Avisio; 6. The volcanic rocks of Creppa, Cappleia, Gimnela, &c.; 7. The mountains between the Gaderthal and the Höllensteiner valley; 8. Geological fragments. G. A. L.

Knop, Dr. A. Ueber die hydrographischen Beziehungen zwischen der Donau und der Aachquelle im Badischen Oberlande. [Hydrographic relations between the Danube and the Aach.] *N. Jahrb.* Heft ix. pp. 942–958.

Discussion of the question whether the Aach takes its origin from the Danube. Between Immendingen and Möhringen the waters of the Danube sink into fissures in Jurassic limestone. Do they pass underground and reappear in the Aach? 14 kilos. of aniline red were thrown into one of the fissures into which the Danube sinks, but the source of the Aach was not coloured: this experiment was made in 1869. The author seeks to explain its failure, and suggests chemical and mechanical experiments to test the question again. Recommends addition of common salt or of chloride of magnesium (mother liquor from neighbouring salt-works), and testing its progress by precipitation with a silver salt. F. W. R.

Koch, Dr. G. A. Die Fervallgruppe. *Verh. k.-k. geol. Reichs.* pp. 226–228.

Notes on this part of the Silvretta district: derives its name from the red colour to which the gneiss weathers; rocks chiefly gneiss, hornblende- and mica-schists, greywacke slates, &c. E. B. T.

Koninck, Prof. L. G. de. Notice sur le calcaire de Malowka et sur la signification des fossiles qu'il renferme. [The Limestone of Malowka and the meaning of its fossils.] *Bull. Soc. Imp. Nat. Moscou,* no. 3, p. 165.

Krejčí, J. Ueber die Lagerung des Pilsner Steinkohlenbeckens. [The Stratigraphy of the Pilsen Coal-field.] *Sitz. k. böhm. Ges. Wiss.* (1874 vol.) p. 241 (published in 1875).

Ladrière, —. Note sur le Terrain dévonien de la vallée de l'Hogneau. [Devonian of the Hogneau Valley.] *Ann. Soc. Géol. Nord,* t. ii. pp. 74–80.

The three divisions of the Devonian rocks of Northern France are present. The limestones worked at Autreppe and in the Angre wood belong to the Middle Devonian. The Givet limestone of this district is divided by means of hard siliceous bands into 8 series of beds. Lists of fossils are given. G. A. L.

Lapparent, Albert de. Note sur l'étage oolithique inférieur dans le département des Ardennes. [Inferior Oolite, Ardennes.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 146–150.

The Ardennes afford a very fully developed type of the Lower Oolitic series, the Great Oolite being 80 metres thick and the Fullers' Earth nearly as much. With regard to the latter, the writer argues that there the Fullers' Earth is more nearly allied to the Bajocian than to the Bathonian. This view was apparently held by MM. Sauvage and Buvignier, who coloured their "Carte géologique des Ardennes" accordingly. This department offers the key to the Oolitic divisions of N. France. G. A. L.

Laspeyres, Prof. Dr. H. Geognostische Darstellung des Steinkohlengebirges und Rothliegenden in der Gegend nördlich von Halle a. d. Saale. [Coal Measures and Rothliegende N. of Halle-on-the-Saale.] *Abh. geol. Spezialkarte Preuss.* Bd. i. pp. 261–603. *Berlin.* With map in two sheets (scale 1:25,000), 1 sheet of sections. A sketch map (scale 1:200,000), 16 woodcuts.

Ledoux, Ch. Mémoire sur les mines de soufre de Sicile. [Sulphur-mines of Sicily.] *Ann. Mines,* sér. 7, t. vii. pp. 1–84, map and plate of sections. Abstract in *Proc. Inst. Civ. Eng.* vol. xli. pp. 308–314.

Chap. I. is devoted to the commercial and industrial aspect of the subject. Chap. II. is geological, and comprises a general descriptive list of the divisions recognized in the Tertiary of Sicily by Mottura. 5 horizons of sulphur-bearing beds are distinguished, all apparently limited to the Upper Miocene. They occur with gypsum in argillaceous limestone and marl. Sections from the following mines are given—Madore (Lercara), Cimicia (Racal-Muto), Caltanisetta, Grotta calda, Sommatino—showing how variable these deposits are. The origin of the sulphur deposits is next discussed, Mottura's views being again adopted. At the top of the saline clays of the Lower Miocene is a zone of rock-salt; this is described, as also are deposits of chloride of potassium, chloride of magnesium, and sulphate of soda. Chap. III. describes the methods of working employed. Chap. IV. gives the metallurgy of sulphur. Chap. V. consists chiefly of tables relating to prices of transport &c. Chap. VI. résumé and conclusion. G. A. L.

Lefèvre, Th. Note sur le gisement des fruits et des bois fossiles recueillis dans les environs de Bruxelles. [Horizon of the Fossil

Fruits and Wood found near Brussels.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 42–51.

Passes in review the various opinions held as to the age of these vegetable remains, by Burtin, Galeotti, Lyell, Lehon, Hébert, Dewalque, Ortlieb, and Chellonneix (1784 to 1870), and shows that the Bruxellian origin of the fruits, &c. lately urged by Rutot, Dewalque, and Vanden Broeck had been admitted by Lyell and others long ago. G. A. L.

Lepsius, R. Ueber den bunten Sandstein in den Vogesen, seine Zusammensetzung und Lagerung. [Vosges Sandstones.] *Zeitsch. deutsch. geol. Ges.* Heft i. pp. 83–103, with plate.

Detailed description of sections of Triassic rocks. Concludes that the Triassic and Jurassic rocks on the outer flanks of the Vosges and the Black Forest, as also on the Rhine, are only the remains of formations which once spread in uninterrupted succession over the whole of S.W. Germany, but were separated by the post-Jurassic upheaval of the Vosges, &c. F. W. R.

——. Beiträge zur Kenntniss der Juraformation in Unter-Elsass. [Jurassic formation in Lower Alsace.] 8vo. *Leipzig.* Pp. 64, with 2 plates.

Letellier, —. Note sur les recherches du charbon de terre dans l'Orne au xviii^{e} siècle. [Searches for Coal in the Orme in the 18th century.] *Bull. Soc. Linn. Norm.* sér. 2, t. ix. pp. 184–195.

Leymerie, A. Observations sur une note de M. Trutat, relative à un dépôt pliocène des Pyrénées-Orientales. [On a note by M. Trutat, see p. 104.] *Compt. Rend.* t. lxxx. pp. 1246, 1247.

Doubts M. Trutat's correctness in attributing the Pliocene beds which he describes to a glacial period, and thinks that they are more probably marine. G. A. L.

——. Sur l'étage dévonien dans les Pyrénées. [Devonian in the Pyrenees.] *Compt. Rend.* t. lxxxi. pp. 25–27.

Divides the Devonian of the Pyrenees thus (in ascending order):—1. Lower, consisting of limestones and calcareous shales, characterized generally by a peculiarly lustrous appearance. 2. Middle, amygdaloid marbles and calcareous shales, &c. 3. Upper, whitish sandstone associated with slaty shales. The last was described by M. Mussy as of Coal-Measure age. G. A. L.

Lindström, A. Några iakttagelser öfver glaciala bildningar i norra Skåne. [Notes on glacial deposits in North Scania.] *Geol. Fören. Stockholm Förhandl.* bd. ii. pp. 196–204, 2 plates.

In two parts. Describes and figures Drift-sections in the parishes of Wedby and Perstorps, showing bedded sands, and in one case a layer of peat, occurring in the midst of bottom-moraine gravel. G. A. L.

Linnarsson, G. Anteckningar från en resa i Skånes silurtrakter år 1874. [Notes of travel through the Silurian regions of Scania, Sweden.] *Geol. Fören. Stockholm Förhandl.* bd. ii. pp. 260–284.

Several localities for Silurian fossils described. The Cambrian and

Silurian beds in Scania are:—1. Sandstone (Cambr.); 2. *Paradoxides* schist=Menevian in England; 3. *Olenus* schist, corresponding to the *Lingula* shales of England; 4. *Dictyonema* schist; 5. *Ceratopyge* limestone; 6. Lower Graptolite schist, corresponding with the Skiddaw slate of England; 7. *Orthoceras* limestone; 8. Middle Graptolite schist, Upper Llandeilo of Moffat, Scotland; 9. *Chasmops* limestone; 10. *Trinucleus* schist; 11. *Brachiopod* schist; 12. Upper Graptolite schist, corresponding with the Coniston group of England and the Gala group of Scotland. E. E.

Linnarsson, G. Öfversigt af Nerikes öfvergångsbildningar. [Palæozoic formations of Nerike.] *Öfv. K. Svenska Vet.-Akad. Förhandl.* no. 5, 47 pp., with coloured geological. map.

The Palæozoic rocks occupy in the province of Nerike, in Central Sweden, a subtriangular space, surrounded by Laurentian rocks. They consist of 3 chief divisions:—1. Immediately above the fundamental gneiss, sandstone, which has not yielded any other fossil remains than tracks and burrows of worms or other animals; 2. Schists belonging to the "Primordial Zone," and containing in their lower part *Paradoxides* and *Ellipsocephalus*, in the upper *Olenus* and allied genera; 3. Lower Silurian limestone with *Asaphi*, *Orthoceratites*, &c., belonging to the *Regio Asaphorum* of Angelin. A list of the fossils is given, the following being figured:—*Harpes excavatus*, n. sp., *Ellipsocephalus muticus*, Ang., *Leptoplastus stenotus*, Ang., and *Beyrichia angelini*, Barr. E. E.

Lippmann, —. [Borings for Salt in the Landes and the Meurthe-et-Moselle.] *Rev. Géol.* t. xii. pp. 165, 166.

Detailed boring-sections of trials for salt made at Dax in the Landes, and at Sommervillers, Dombasle, Varangeville-Saint-Nicolas, Sainte-Valorée, and Laneuveville, in the Meurthe-et-Moselle. Considerable deposits of rock-salt were proved in each case. G. A. L.

Lodin, —. Mémoire sur les filons du comitat de Zips (Hongrie). [The Lodes of Zips, Hungary.] *Ann. Mines*, sér. 7, t. vii. pp. 382–421, geological map, pl. x. fig. 3.

In 3 parts:—i. Topographical, Geological (pp. 385–392); ii. Description of the copper-lodes of Kotterbach, Slovenska, and Gällnitz, with analyses of ores; iii. Mode of working, &c., Metallurgy. The rocks of the district are:—1, Granite; 2, Gneiss; 3, Mica schists, either pre-Silurian or Silurian; 4, Green schists,—no fossils have been found in these, but they are supposed to be Devonian, frequently traversed by Diabase and Serpentine rocks; 5, Carboniferous rocks (conglomerates, shales, marls, and limestone); 6, Rothliegendes; 7, Trias; 8, Eocene. G. A. L.

Lorieux, E. Ressources minéralurgiques et salicoles de la Loire-Inférieure. [Mineral resources of the Loire-Inférieure.] *Rev. Sci.* pp. 194–207.

A description of the coal-beds in the district. They belong to the

Devonian, and are associated with a great thickness of conglomerates; the seams are irregular and nearly vertical, numbering 7 in the middle district. Output 14,000 tons at Montrelais, 10,000 at Mouzeil. The other minerals of the country are noticed, and the salt marshes and extraction of salt described, the average yield being about 43,000 tons. E. B. T.

Loriol, P. Monographie paléontologique et géologique des étages supérieurs de la formation jurassique. 2^{e} partie. [Palæontological and Geological Monograph of the U. Jurassic. Part 2.] *Paris.*

Lory, Ch. Note sur des gisements de gypse dans le terrain jurassique de l'arrondissement de Gap. [Gypsum-deposits in the Jurassic of the Arrondissement of Gap.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 17–22, one fig. in text.

The deposits of gypsum occur in connexion with the Middle and Upper Lias and at the junction of the Kellovian and Oxfordian. These Jurassic gypsums are more crystalline, more lamellar than and not so granular as the common Triassic gypsum of the French Alps. The figure represents a section through a sub-Oxfordian lenticular mass of gypsum between Montrond and St. Genis. G. A. L.

——. Essai sur l'Orographie des Alpes de la Savoie et du Dauphiné considérée dans ses rapports avec la structure géologique de ses montagnes. [Relation between the Geology and Orography of the Alps of Savoy and Dauphiné.] *Club alp. Franç.* 1ère an. p. 283.

Lossen, K. A. [Letter on several local points in the Geology of the Hartz.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 448–455.

Lotti, B. Scoperta di strati nummulitici presso Prata e Gerfalco in provincia di Grosseto. [Discovery of Nummulitic beds, &c.] *Boll. R. Com. geol. Ital.* pp. 140–144.

Recognizes a thin set of limestones with nummulites and fucoids in the hills above Grosseto, lying below a thick mass of sandstones and above another of clay-shale. E. B. T.

——. Il terreno nummulitico del versante orientale della Cornata di Gerfalco. [Nummulitic beds of Gerfalco.] *Boll. R. Com. geol. Ital.* pp. 227–231.

Nummulitic beds alternate with shales containing fucoids, of a total thickness of 150 feet; below is a thick mass of calcareous sandstones and shales with fucoids, which represent the Cretaceous. Then comes a gap; for the beds below are U. Lias and unconformable. E. B. T.

Ludwig, Dr. R. Die Gegenden am Ssuna- und Semtsche-Flusse im Olonezer Gouvernement. [The country of the Ssuna and Semtsche rivers in the Government of Olonetz]. *Bull. Soc. Imp. Nat. Moscou,* no. 3, pp. 108–127, 1 plate.

——. Appunti geologici sull' Italia. *Boll. R. Com. geol. Ital.* pp. 165–179.

Extract and translation of a paper noticed in the GEOLOGICAL RECORD for 1874, p. 81.

Macpherson, Joseph. De la existencia de fenómenos glaciales en el sur de Andalucia, durante la época cuaternaria. *Ann. Soc. Españ. Hist. Nat.* vol. iv. part 2.

Shows the existence of glacial phenomena during the Pleistocene epoch in parts of Sierra Nevada, and describes a well-defined ancient glacier near Lanjaron, fifteen kilometres long, the terminal moraine of which is 700 metres above the sea level. J. McP.

Maderspach, L. Antimonvorkommen bei Eperies. [Occurrence of Antimony at Eperies.] *Verh. k.-k. geol. Reichs.* pp. 64–66, woodcut.

Quartz veins in Trachyte contain antimony, and also occasionally, in small cavities, silver ores—a small yield of both.

Makowski, Alexander. Der petrefactenführende Schieferthon von Petrowitz in Mähren. [The fossiliferous clay-slate of Petrowitz, Moravia.] *Verh. nat. Ver. Brünn,* Bd. xiii.

Malaise, Prof. Constantin. Sur quelques roches porphyriques de Belgique. [Belgian porphyritic rocks.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* pp. xliv–xlvi.

Notices the occurrence of Eurite at Spa, Nivelles, Ottignies, Villers-la-Ville, Strichon (Tilly), and Grand-Manil, near Gembloux; of Hypersthenite between Les Tombes and the Abbey of Grand-pré (Mozet); and of Diorite on both banks of the Amblève, near Stavelot. G. A. L.

——. Quelques mots sur le poudingue d'Alheur (Romsée). [Alheur conglomerate.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* pp. xcii, xciii.

This conglomerate is either Quaternary or Tertiary, and occurs in large blocks lying upon the Hervian beds in the commune of Romsée.

Mallada, Lucas. Breve reseña geológica de la Provincia de Huesca. *An. Soc. Españ. Hist. Nat.* vol. iv. part 2.

A geological sketch of the province of Huesca, where granitic rocks, and Devonian, Triassic, Liassic, Cretaceous, Tertiary, and recent deposits are met with. Many fossils from the different formations have been found, specially from the nummulitic group, numbering upwards of 160 species. J. McP.

Mantovani, P. Descrizione geologica della campagna Romana. [Geology of the Roman Campagna.] Pp. 116; 1 map and 5 plates. *Turin.*

Manzoni, A. Intorno alle ultime pubblicazioni del Prof. Ponzi sui terreni pliocenici delle Colline di Roma, e specialmente intorno ad una così detta Fauna Vaticana. [On Prof. Ponzi's Vatican zone, &c.] *Boll. R. Com. geol. Ital.* anno vi. pp. 368–371.

Argues that the deposits of Monte Mario and Vaticano should be classed as Pliocene rather than Miocene, and that the *Fauna Vaticana* is that of the Lower Pliocene. E. B. T.

Marchese, —. Report on the Mines of Montesanto in Sardinia. *Genoa.*

Martin, Jules. Des nodules phosphatés du Gault de la Côte-d'Or, et des conditions particulières du dépôt de cet étage. [Phosphatic nodules of the Gault of the Côte-d'Or, and the special conditions of their deposition.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 273–281.

Establishes the presence of bands of phosphatic nodules in small outliers of Gault, refers their origin to the action of mineral springs, and notices the small size which obtains with regard to the fossils of the Gault generally. A list of the Albian fauna of the Côte d'Or is given. G. A. L.

——. Sur divers gisements de Phosphate de Chaux dans la Côte d'Or. [Various phosphatic deposits in the Côte d'Or.] *Journ. Agric. Côte d'Or.* 1^er^ trim. p. 51.

Martins, Prof. Charles. Topographie géologique des environs d'Aigues-Mortes. [Geological topography of the neighbourhood of Aigues-Mortes.] *Bull. Soc. Géogr. France*, Feb., pp. 113–130, folding map.

In 22 centuries the Rhône delta has run out 26 kilometres into the sea. The progression has not slackened its pace in modern times. The Grand Rhône has formed the Camargue, whilst the Petite Camargue (the Aigues-Mortes tract) is due to the Petit Rhône and the Durance. In the latter district old shore-lines are recognizable. The writer traces, by means of historical documents and topographical evidence, the changes which have taken place in this part of the delta, shows that when St. Louis embarked at Aigues-Morte that town was not on the sea-coast, and was only connected with it by shallow lagoons. The routes from that town to the coast followed by that monarch and by the Emperor Charles V. after him are shown on the map. A copy of part of a map of the region, dated 1591, by Jean Bompar, is also given. G. A. L.

Massart, Alfred. Gisements métallifères du district de Carthagène (Espagne). [Metalliferous deposits of the district of Carthagena, Spain.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 58–107, col. plate.

The Introduction gives an historical account of the Mining Industry of the district. Chap. i. describes the geology of the district, which is of a very disturbed character. The metalliferous zone is formed of schistose and calcareous Permian rocks; outside this zone are Tertiary and Quaternary conglomerates, often cut through by trachytes and basalts. Chap. ii. treats of the ore-deposits, which are described under the following heads:—A. Silicate of iron deposits, forming a thick persistent bed in the schistose or lower portion of the Permian rocks exposed (Middle Permian). B. Blende deposits, in beds higher up in the same schists, but not so constant as the Iron-silicate. C. Hydroxide of Iron, in beds higher up still in the same series. Under this head are described deposits of carbonate of iron, plumbiferous hydroxide of iron, and argentiferous clays, which occur in similar geological positions. D. Galena, in pockets, reniform masses, and crystalline grains, in strings, and in the limestones in capricious ramifications some centimetres in width. True veins are the exception. E. Calamine, in lenticular masses in the limestones, and more or less mixed with blende, wherever the schists and the limestones have been brought face to face. F. Oxide of tin, as lenticular masses of wood-tin in the upper schists. G. Carbonate of copper, seldom workable, in masses both in the schists and limestone and at their junction. H. Iron-pyrites, very common in the schists, in the form of beds, veins, and pockets. Chap. iii. on the origin of the various deposits. Analyses of each kind of ore are given; and the plate consists of sections illustrating the mode of occurrence of each deposit. G. A. L.

Maurer, Friedrich. Paläontologische Studien im Gebiet des rheinischen Devon. [Palæontological Studies in the Rhenish Devonians.] *N. Jahrb.* Heft vi. pp. 596–618; with plate.

This part of the author's series of studies deals with the fauna of the red iron-ore from the Haina mine, near Giessen. The ore occurs in Devonian limestone, and has yielded 63 species and varieties. The fauna is similar to, but not identical with, that of the *Stringocephalus*-limestone of Nassau. One new species is described and figured as *Amplexus biseptatus*. F. W. R.

Meneghini, Prof. G. Paragone paleontologico dei vari lembi di Lias Superiore in Lombardia. [Comparative Palæontology of the members of the Upper Lias in Lombardy.] *Rome.*

Mercey, N. de. Géologie résumée des cantons de la Somme; Canton d'Amiens (suite). [Geology of the Canton of Amiens.] *Bull. Soc. Lin. N. France*, Nos. 37, 38, 41; pp. 283, 299, 347. See also GEOLOGICAL RECORD for 1874, p. 82.

Meunier, Stan. Géologie des environs de Paris. [Geology of Paris.] Pp. viii, 510; 112 figs in text. *Paris.*

Describes the beds, gives full lists of fossils and an index to the fossiliferous localities.

——. Sur les puits naturels du calcaire grossier. [The Natural Pits of the *Calcaire Grossier*.] *Compt. Rend.* t. lxxx. pp. 797–799.

Describes certain cylindrical cavities filled with gravel, sand, and clay, found in the neighbourhood of Paris and elsewhere. They have all the characters of *pot-holes*; and the author dismisses the theory of their formation by geyserian ejections, thinking that they were undoubtedly formed from above. G. A. L.

——. Remarque sur le diluvium granitique des plateaux; composition lithologique du sable kaolinique de Montainville (Seine-et-Oise). [The granitic drift of the plateaux; lithological composition of the "kaolinic" sand of Montainville.] *Compt. Rend.* t. lxxxi. pp. 400–403.

The granitic drift of the heights round Paris is compared with the so-called eruptive sands, which are supposed to be connected with faults in the Paris Basin. G. A. L.

Meunier, Stan. Examen lithologique du sable à glauconie, inférieur au calcaire grossier. [Lithological examination of the glauconitic sand underlying the 'Calcaire Grossier.'] *Compt. Rend.* t. lxxxi. pp. 1200–1202.

This sand, in the neighbourhood of Paris, consists of felspar and quartz of granitic derivation, and of flint, limestones, and phosphorites of sedimentary rocks, especially derived from the pisolitic limestone, the Chalk, the Chloritic Marl, and the Gault. The granitic portion of the sand is supposed to have been ejected from below, and not to be due to the wear and tear of subaërial granites. The most compact granite at a red heat becomes a friable sand. G. A. L.

Mille, —. [Passes and Geology of the Central Pyrenees.] *Annales des Ponts et Chaussées,* June, pp. 508–514.

Describes the geology and mineral products, and the physical geography, with a view to constructing a railway across the centre of the chain. (Abstract in *Proc. Inst. Civ. Eng.* vol. xli. pp. 233, 234.)

Miller, —. Ueber die Tiefseefacies des oberschwäbischen Miocäns und die Bryozoen von Ursendorf. [The deep-sea character of the Miocene of Upper Swabia; and the corals of Ursendorf.] *Jahresh. Ver. Nat. Württ.* Bd. xxxi. pp. 82–84.

Moesta, —. *N. Jahrb.* Heft iii. pp. 294, 295.

Letter recording discovery of *Cidaris grandæva* in Upper Muschelkalk, and calling attention to a little island of old rocks in Hesse forming a connecting link between the schistose rocks of the Rhine and those of the Hartz. F. W. R.

Mojsisovics, Dr. E. von. Die geologische Detailkarte der Umgebungen der Seisser-Alpe und von St. Cassian im südlichen Tyrol. *Verh. k.-k. geol. Reichs.* p. 121.

Preliminary notice of map of the St. Cassian district.

——. Ueber norische Bildungen in Siebenbürgen. [Noric beds in Transylvania.] *Verh. k.-k. geol. Reichs.* pp. 142–145.

Notes the occurrence of two horizons of Hallstadt beds (Noric and Carnic), lists of fossils being given. Suggestions on the contemporaneity of the Melaphyres are added, and parallels drawn between these and similar beds in S. Tyrol. E. B. T.

——. Das Gebiet von Zoldo und Agordo in den Venetianischen Alpen. [District of Zoldo, &c.] *Verh. k.-k. geol. Reichs.* pp. 220–221, and *Boll. R. Com. geol. Ital.* pp. 294–296.

Found the grey limestone of S. Tyrol near Cortina to be of Liassic age; further notes on the Wengen and St. Cassian beds of the district cited. E. B. T.

——. Das Gebirge um Hallstadt. *Verh. k.-k. geol. Reichs.* pp. 306–310.

Abstract of the second part of his memoir in the "Abhandlungen." Relates chiefly to the genetic history of some of the Triassic Ammonite subgenera, giving results as to the distribution of the groups. E. B. T.

Mojsisovics, Dr. E. von. Ueber die Ausdehnung und Structur der südosttirolischen Dolomitstöcke. [S. Tyrol Dolomites, &c.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1, Bd. lxxi. pp. 719–736.

Defends Von Richthofen's view that the Dolomite masses are separate coral-reefs, and not parts of a continuous sheet. Describes their structure, and finds in the conglomeratic portions, and in a peculiar kind of oblique lamination, evidences of the surf on the old reef, while the thin Dolomites at the base of the Raibl beds would have been formed in the lagoon. E. B. T.

Mont Richer, — de. [Copper in Corsica.] *Rev. Géol.* t. xii. pp. 100, 101.

Describes the copper-lodes of St. Augustin in the communes of Castifao and Moltifao on the W. side of the island. The ore is chiefly copper-pyrites; but there are also some carbonates. The veins run in N. and S. through chloritic schists. An analysis of ore from the Pozzo shaft is given. G. A. L.

Morstadt, Dr. J. Zur Terraingestaltung in Südtirol. [Stratigraphy of South Tyrol.] *Zeitsch. deutsch. österr. Alpenver.* Bd. vi. Heft 1.

Mortillet, G. de. L'Acheuléen et le Moustiérien, à propos du Mont-Dol et du Bois-du-Rocher. [The Acheulean and Moustierian in connexion with Mont-Dol and the Bois-du-Rocher.] *Mat. Hist. Homme*, sér. 2, t. vi. pp. 174–176.

Mourlon, Michel. Sur l'étage dévonien des psammites du Condroz en Condroz. [Devonian Condroz sandstones in the Condroz district.] *Bull. Ac. Roy. Belg.* 2 sér. t. xxxix. pp. 602–659, 2 plates of sections.

The *Condroz psammites* comprise the beds lying between the *Famenne schists* below and Dupont's No. I. Division of the Carboniferous Limestone. The series is composed of quartzose grits, shales, *macigno* (argillo-calcareous grit), and anthracite. The fauna consists of 3 Echinoderms, 2 Corals, 22 Brachiopods, 17 Lamellibranchs, 8 Gasteropods, 3 Cephalopods, and 1 fish. A full list of species is given in a tabulated form (pp. 652–659), and stratigraphical details illustrated by coloured sections are also given. It is on the Ourthe that the series seems to reach its greatest thickness. The following subdivisions are distinguished in ascending order:—I. Psammites with ruffled (*gauffrée*) surface of Esneux; II. Nodular *Macigno* of Souverain-Pré; III. Paving-stone Psammites of Monfort; IV. Psammites and *Macigno* of Évieux. Each of these is further subdivided into Upper, Middle, and Lower. The total thickness is about 600 metres. [Reports by Messrs. Dewalque, De Koninck, and Dupont on this communication are to be found at pp. 469, 476, 477 of the same volume.] G. A. L.

——. Sur l'étage dévonien des psammites du Condroz dans le bassin de Theux, dans le bassin septentrional (entre Aix-la-Chapelle et Ath), et dans le Boulonnais. [The Devonian division of the Condroz Sandstones in the Theux basin, in the Northern basin (between Aix-la-Chapelle and Ath), and in the Boulonnais.] *Bull. Ac. Roy. Belg.* sér. 2, t. xl. pp. 761–796, coloured plate of sections.

A continuation of the above on the stratigraphical details of the Condroz series. A number of detailed sections in each of the districts mentioned are given, especially as to the great Northern basin, showing that the 4 divisions recognized on the Ourthe hold good from Prussia to the Boulonnais, the Évieux beds, however, being absent, as well as those of Esneux, Souverain-Pré, and of Montfort (in part) in most of the Northern basin. In this direction the whole series is much diminished in thickness. The local lacunæ are clearly shown by means of a table at p. 795. [For Reports on this paper see **Dewalque**, p. 58.] G. A. L.

Mueller, Prof. Albr. Kleinere Mittheilungen. *Verh. nat. Ges. Basel*, Th. vi. pp. 267–274, 280–291.

The subjects of these Notes are:—1. Fellithal Granite; 2. Occurrence of Granulite and Quartzite-gneiss in the Vosges; 3. The blue colour of certain Jurassic limestones. E. B. T.

——. Vorkommen erratischer Blöcke in und um Basel. [Erratic blocks in and around Bâle.] *Verh. nat. Ges. Basel*, Th. vi. pp. 276–280.

Upper Jurassic boulders occur, probably dropped by the great Alpine glaciers, which may have extended over the Basler Jura and low country, and brought the blocks from the S. Again, Black Forest gneiss blocks seem to point to glaciers proceeding from thence. E. B. T.

——. Der Steinkohlenbohrversuch bei Rheinfelden. [Trial coal-boring near Rheinfelden.] *Verh. nat. Ges. Basel*, Th. vi. pp. 345–352.

Undertaken by a Committee for patriotic purposes. The diamond borer was used. To 285 ft. was Bunter sandstone, to 1170 ft. red and green speckled clay—Rothliegendes probably, at 1180 ft. undoubted Rothliegendes, at 1203 ft. granite, at 1211 ft. mica-schist, at 1230 ft. red granite, at 1316 ft. to 1422 ft. micaceous diorite; as the hole seemed to have struck upon an eruptive dyke it was deemed useless to proceed further. E. B. T.

Munoz, M. B. Apuntes acerca del distrito de Hiendelaencina, provincia de Guadalajara. [On the district of Hiendelaencina in Guadalajara.] *Rev. Min.* ser. B, pp. 70, 83, 91, 101.

Nathorst, A. G. Om 'brottstycken' af hvarfvig lera inneslutna i en oskikdad lera, som derjente gångformigt genomsätter der förra. [On fragments of stratified clay enclosed in disturbed clay, which also passes through the former in veins.] *Geol. Fören. Stockholm Förh.* Bd. ii. pp. 417–430; three plates of sections.

Neumayr, Dr. M. Zur Bildung der Terra rossa. [Formation of the Terra rossa.] *Verh. k.-k. geol. Reichs.* pp. 50, 51, and *Boll. R. Com. geol. Ital.* pp. 97–99.

The Red loam which fills hollows and pockets in the limestone plateaux or Karst district of S. Europe is traced to decomposition of the limestone under circumstances that prevented the washing away of the detritus so formed. It is of various ages; in the Karst, where it contains *Hippotherium*, it is of Miocene age. The red silt of the 'Challenger' expedition is alluded to as a proof of silica and iron in calcareous organisms. E. B. T.

Neumayr, Dr. M. Der Kalk der Akropolis von Athen. [Limestone of the Acropolis, Athens.] *Verh. k.-k. geol. Reichs.* pp. 68–70.

Close to the Propylæa a *Nerinæa* was found, which proves the Acropolis rock to be Mesozoic; on the other hand, the limestone of Hymettus alternates with crystalline schists; its age is not certain. E. B. T.

——. Die Insel Kos. *Verh. k.-k. geol. Reichs.* pp. 170–174.

Preliminary notice of the geology of the island of Cos between Cnidus and Halicarnassus. The structure is complex, the formations being:—Crystalline schists with included marbles, Hippurite-limestone, several members of the Tertiaries and eruptive rocks, Trachytes, &c. There is an unconformity between two parts of the marine Pliocene. This island is the most northern of the archipelago at which the Pliocene occurs. E. B. T.

——. Tertiäre Süsswasserablagerungen in Siebenbürgen. [Freshwater Tertiaries in Transylvania.] *Verh. k.-k. geol. Reichs.* pp. 330–331.

Abstract of an article for the 'Jahrbuch.' Notes the presence together of forms allied to some now living in China and to others in N. America. E. B. T.

Nordström, Th. Om Torpa saltkälla. [The salt spring at Torpa in West Gothland, Sweden.] *Geol. Fören. Stockholm Förh.* Bd. ii. pp. 236–241; plate.

1000 parts of this water contain 12·55 parts mineral constituents; and of those 0·016 consist of iodide of magnesium. Temp. 8° C. Several borings have shown that a bed of postglacial clay, 100 feet thick and of some extension, is impregnated with iodine and chloride salts. E. E.

Olry, —. [Report on the Crespin Concession (S. of the Valenciennes Coal-field).]

Olszewski, Stanislaus. Kurze Schilderung der miocänen Schichten des Tarnopoler Kreises und des Zbruczthales in Galizien. [Miocene beds, &c. in Galicia.] *Jahrb. k.-k. geol. Reichs.* Bd. xxv. Heft 1, pp. 89–96.

Railway-sections have laid open the following beds:—1. Lower Marine, corresponding to the Leitha conglomerate of the Vienna Basin; 2. Brackish-water beds, equivalent to the Cerithium-beds of the Sarmatian age; 3. Upper Marine beds. Lists of fossils are given. E. B. T.

Omboni, Giov. Gita alle Marocche fatta dai naturalisti riuniti ad Arco nel Settembre 1874. [Excursion to the Marocche.] *Arco.*

Palumbo, —. La grotta della Masciara . . . . . , Lecco.

Parker, James. On the Relationship between the Somme River and the Somme Valley. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 286–307; map and sections.

Endeavours to show that the subaërial theory of the excavation of the valley and the river-origin of the gravels is untenable. Describes the physical geography of the district, illustrating his remarks by a map on a scale of 5·05 miles to the inch. There are few true springs in the district; but the river and its tributaries are fed by water-holding 'sponges' of peat in the valley-bottoms. The water only collects here because a valley exists. The highest source of the Somme (124 miles from its mouth along the windings) is only 220 feet above the sea; the average fall is 1 in 3000. This source cannot have been higher in earlier times; but the subaërial hypothesis requires that the river should have run over what are now hills lower down the valley; the fall of the old river would therefore have been only 1 in 6000. The theory in question assumes a plain sloping towards the sea, in which the main valley has been excavated from E. to W., the tributaries from N. to S. or from S. to N.; why should the water have flowed in so regular a manner in the two directions simultaneously? The water which is supposed to have excavated the tributary valleys can only have done so by aid of a fall into the main valley, which must therefore have existed before the tributaries could have been excavated; but the water which is supposed to have excavated the main valley could only have been supplied by the tributaries. The author states that most published sections of the district give a wrong idea of its character; there are no continuous horizontal terraces, nor does the gravel of any one point correspond in position with any gravel on the opposite side of the valley. The loam which overlies the various gravels is of the same character as that overlying the plateaux. W. T.

Passy, A. Description géologique du département de l'Eure. [Geology of the Eure.] Pp. xxxii, 294. 4to. *Paris.*

Contains an Appendix giving notes on the orography, geology, agriculture, industry, and botany of each commune.

Paul, C. M. Centrales Hügelland der Bukowina. [Central Hill-district of the Bukowina.] *Verh. k.-k. geol. Reichs.* pp. 223, 224.

The Sarmatian beds (Miocene) form a large part of the Bukowina; the flanks of the hills show much Drift.

——. Braunkohlenführende Mediterran-Ablagerungen in West-galizien. [Miocene coal, W. Galicia.] *Verh. k.-k. geol. Reichs.* pp. 264–266.

This coal-bed reaches to 6 metres in thickness; the mollusca found show that it is intercalated in the marine Mediterranean stage of the Miocene. E. B. T.

——. Neue Erfahrungen über die Deutung und Gliederung der Karpathen-Sandsteine. [On the Carpathian sandstones.] *Verh. k.-k. geol. Reichs.* pp. 294, 295.

On the correlation of local divisions, some Eocene, others L. Cretaceous.

Paul, C. M. Geological part of "Die Congerien- und Paludinenschichten Slavoniens und deren Faunen." *Abh. k.-k. geol. Reichs.* Bd. vii. Heft 3, pp. 1–18, map and 10 figures of sections in text. [See **Neumayr**, under Palæontology.]

Describes the distribution of the *Congeria* and *Paludina* beds in W. Slavonia under the heads W. and E. Basins. The *Paludina* beds are divided as follows:—*a*. Upper *Paludina* beds; *b*. Middle *Pal.* beds, subdivided into *α*. *Vivipara bifarcinata* beds; *β*. *V. stricturata* beds; *γ*. *V. notha* beds; and *c*. Upper *Paludina* beds, comprising—*α*. *Vivipara Sturi* beds; *β*. *V. Hörnesi* beds; *γ*. *V. Zelebori* beds; *δ*. *V. Vukotinovici* beds. The map shows the lie of these beds on the N. side of the river Save (parallel to which is their strike) between Neu Gradiska and Brood. The other formations shown are the Sarmatic beds, Cerithienkalk and white marl; the *Leitha* kalk, the Sotzka beds, the Hornfels trachyte, and the crystalline schists. The sections chiefly illustrate the occurrence of the various lignitic deposits in the Neogene beds. G. A. L.

Peck, Dr. R. Ueber einige neue mineralogische und geognostische Funde in der preussischen Oberlausitz. [New mineralogical and geological discoveries in Prussian Upper Lusatia.] *Abh. nat. Ges. Görlitz*, Bd. xv. p. 186. [From *N. Jahrb.* Heft viii. p. 884.]

Notices several discoveries of minerals in the granite; occurrence of black earthy cobalt in the Heideberge; rich copper-ores in Silurian rocks of Niederludwigsdorf; occurrence of *Lingula Rouaulti* and a *Discina* in the quartzite of Dubrau; and Permian shales, with fossils, near Wünschendorf. F. W. R.

Péroche, J. Note relative aux dépôts d'alluvion et à l'état glaciaire. [Alluvial Deposits and the Glacial age.] *Comp. Rend.*. t. lxxxi. p. 501.

Urges the possible relation between ice-action and the granitic drift of the plateaux round Paris. [See **S. Meunier**, p. 83.] G. A. L.

Perron, E. [Cretaceous beds of Gray, Haute-Saône.] *Rev. Géol.* t. xii. pp. 167–169.

The Cretaceous beds of Gray were deposited in the straits which separated the Morvan from the Vosges, and appear to indicate a communication between the Rhodanian basin and that of Paris. The Neocomian, lying upon Portlandian, is here scarcely 30 feet thick, and consists of marls rich in fossils. The Albian is represented by green sands below and bluish-grey clays above (Gault). In some cases the Cenomanian is seen to follow, and is itself overlain near Velleclaire by a white veined limestone, which doubtless represents the White Chalk. Lists of fossils are given. G. A. L.

Petermann, A. Note sur les gisements de phosphates en Belgique, et particulièrement sur celui de Ciply. [Phosphatic deposits of Belgium, and especially of Ciply.] *Bull. Ac. Roy. Belg.* 2 sér. t. xxxix. pp. 25–40.

Two analyses of phosphatic nodules from the Malogne Conglomerate and two of the brown Chalk of Ciply are given, with these results, that the mean composition of the former gives 19·75 and the latter 11·25 p. c. of anhydrous phosphoric acid. A new locality for phosphatic nodules, discovered by M. Lambert at Ghlin, is alluded to in a postscript; an analysis is given showing 21·82 per cent. of phosphoric acid. [Reports by Messrs. Melsens, Donny, and Briart on this paper are to be found at pp. 12 and 13 of the same vol.] G. A. L.

Peters, Prof. K. Ueber den Kalkstein aus dem Sauerbrunngraben bei Stainz in Steiermark. *Verh. k.-k. geol. Reichs.* pp. 300, 301.

This limestone, near Gratz in Styria, contains felspar, which from analysis seems to be Albite; it is 6–8 metres thick, and interbedded in gneiss. E. B. T.

Petrino, Freiherr O. von. Ueber die Stellung des Gypses in Ostgalizien und der Bukowina innerhalb der Neogenablagerungen. [Position of gypsum beds in the newer Tertiaries.] *Verh. k.-k. geol. Reichs.* pp. 217–220; woodcut.

Fossils found above the gypsum show that it belongs to the upper division of the Mediterranean stage, in which it is an intercalation.

Pettersen, Karl. Profil gjennem Vest-Finmarken, fra Sörö-Sund mod Vest till Porsanger mod Ost. [Section through W. Finmark.] *Forhand. Vid. Selsk.* 1874. Pp. 180–184. *Christiania,* 1875.

In the section are shown upper and lower primitive stratified rocks, amphibolite, gabbro, and greenstone, and also Silurian (Raipas group) and Devonian (Gaisa group). E. E.

——. Naturlige Tunnel- og Hule-dannelser inden Vest Finmarkens Kystströg. [Natural tunnels and holes on the coast of West Finmark.] *Geol. Fören. Stockholm Förh.* Bd. ii.

Tunnels or arches more or less resembling the well-known instance of Torghattan, but smaller, in or near the island of Sörö, are described. The largest is 31 metres above the sea, and marks a former level supposed to date somewhat prior to the gulfstream or later postglacial period. The others stand nearer the water; and all are hollowed in softer schist. The holes are giants' kettles in the island of Vanna, from one of which a fissure descends apparently several hundred feet. H. M.

——. Short Sketch of the Geology of the North of Norway. *Geol. Mag.* dec. 2, vol. ii. pp. 385–392.

Gives an account of the geological literature relating to the district, and describes the rocks as follows:—1. *Primitive Rock*, occurring generally in narrow strips of unknown thickness; probably Laurentian. 2. *Thomsö mica-slate group*, 1900 metres thick; probably Old Cambrian or Huronian. 3. *Balsfjord slate-field*, thickness unknown; probably younger Cambrian or Taconian. 4. *Alten* and *Kvænangen group* (Raipas system of T. Dahll); probably Silurian, but perhaps Devonian. 5. *Golda group* (Gaisa system of Dahll); perhaps Devonian. 6. *Jurassic*, occurring only at Andö in Vesteraalen. There are no Cretaceous or Tertiary rocks. Drift occurs along the valleys up to 60 metres above the sea-level. There is no evidence that the land is now rising; the elevation which has occurred during the last 1000 years is quite insignificant. The unstratified rocks are:—1. *Gneissoid granite* of the coast tract, having all possible transitional forms from gneiss to pure granite. 2. *Inland granite,* often with oligoclase. 3. *Gabbro* or *Hypersthenite.* 4. *Greenstone.* 5. *Olivine Rock.* 6. *Serpentine.* The gneissoid granite is probably metamorphosed sedimentary rock. The inland granite is irruptive; it breaks through the Thomsö group, but is older than the Balsfjord group. The Gabbro breaks through both, but is older than the Raipas group. The greenstone is younger still, but is older than the Gaisa group. W. T.

Pichler, Prof. Adolf. [Notes from Tyrol.] *N. Jahrb.* Heft ii. pp. 173, 174.

Calls attention to the occurrence of *Avicula-contorta* beds on the west side of the Sonnwendjoch; to recent earthquake shocks in the neighbourhood of Innsbruck; to the quartz porphyrite of the Pusterthal; and to the occurrence of *Pterophyllum Gümbeli* in the Gaflein, near Nassereit. F. W. R.

——. Aus der Trias der nördlichen Kalkalpen Tirols. [Alpine Trias.] *N. Jahrb.* Heft iii. pp. 265–278.

Controverts the views of Mojsisovics, and defends those of Gümbel and himself as to the classification of the Triassic beds of the N. Alps of Tyrol. Gives the following classification of them:—*Bunter sandstone*—*a.* Conglomerate, *b.* Hauptbuntsandstein, *c.* Röth. *Rauchwacke, Muschelkalk* (formerly Lower Alpine Limestone)—*a. Natica-stanensis* beds (Guttenstein Limestone), *b. Gyroporella-pauciforata* beds, *c. Arcestes-Studeri* beds (Virgloria Limestone). *Keuper*—*a.* Lower *Cardita* beds (formerly Middle Alpine Limestone), *b.* Buntenrothe Knollenkalke, *c. Chemnitzia* beds, *d.* Upper Cardita beds. F. W. R.

——. Beiträge zur Geognosie Tirols. [Geology of Tyrol.] *N. Jahrb.* Heft ix. pp. 926–936.

Describes—1. Porphyrites, including varieties called *Töllite, Vintlite,* and *Ehrwaldite* [see PETROLOGY]; 2. The Granite of Brixen; 3. The Porphyry of Botzen; 4. Porphyritic schist of Fieberbrunn; 5. A micaceous clay-slate near Lans; 6. The Dolomite of Cislon (Mendola Dolomite); 7. The *Cardita* beds; 8. The Sonnenwendjoch, a range of hills of northern Alpine Limestone; 9. Occurrence of Laumontite in the Zillerthal. F. W. R.

Piette, —. Grotte de Gourdan. [Gourdan Cave.] *Bull. Soc. Anthrop. Paris,* t. x. p. 289.

Continued from last volume.

Platz, Prof. D. Geologische Geschichte der Alpen. [Geological History of the Alps.] *Zeitsch. deutsch. österr. Alpenver.* Bd. vi. Heft 1.

Plocq, —. [Artesian Wells at Dunkirk.] *Rev. Géol.* t. xi. pp. 151, 152.

Gives sections of two borings, showing much sand and some marly clay overlying a great thickness of Eocene clay (Ypresian), in which they stop. G. A. L.

Ponzi, Prof. G. Studj sulla geografia naturale e civile dell' Italia, pubblicati per cura della deputazione ministeriale istituita presso la Società Geografica Italiana. [Essays on the Physical and Political Geography of Italy.] Pp. 250, with atlas. *Rome.*

Contains a geological map of the Roman Basin, with explanatory text.

Popovics, A. B. Geologische Skizze über Serbien. [Geological Sketch of Servia.] *Belgrade.*

Pošepny, F. Ueber den inneren Bau der Offenbányaer Bergbaugegend. [Structure of the Mining District of Offenbánya.] *Verh. k.-k. geol. Reichs.* pp. 70–74.

The veins are mostly lines of dislocation into which ores have been subsequently introduced: the eruptive rocks are not the cause of the dislocations so much as the effect. E. B. T.

——. Ueber einige tektonische Verhältnisse der Bergbaugegend von Boitza in Siebenbürgen. [Some physical relations of the Mining District of Boitza, Styria.] *Verh. k.-k. geol. Reichs.* pp. 77–80.

The veins are partly in augite-porphyry and partly in the dacite dykes, which intersect the former, which is Mesozoic, overlain by Tertiary red shales and sandstones; the latter eruptive rock is Tertiary. E. B. T.

Potier, —. Sur les sables Landéniens. [The Landenian Sands.] *Bull. Soc. Géol. France.* 3 sér. t. ii. pp. 577–579.

Urges that the true equivalence of the lignitic group of the white sands of the Paris Basin must be looked for in the lower portion of the Ypres clay. G. A. L.

Quin, L. Ch. Sol et rivages primitifs du Hâvre. [Ancient Shores of Havre.] *Bull. Soc. Géol. Norm.* t. ii. fasc. 1, p. 3.

Radimsky, V. Das Wieser Bergrevier. [The Wieser Mining District.] *Zeitsch. Berg- Hütt. Ver. Kärnthen,* 1875, no. 15–18.

Ramsay, Prof. A. C. Geological history of some of the mountain chains and groups of Europe. Lectures at the Royal School of Mines. *Min. Journ.* vol. xlv. pp. 57, 79, 106, 135, 162, 191.

Rath, G. vom. Der Monzoni in südöstlichen Tirol. [The Monzoni in S.E. Tyrol.] *Bonn.*

Reich, H. Beschreibung der Diamantbohrung der k.-k. priv. Staats-Eisenbahn-Gesellschaft bei Böhmisch-Brod. [Diamond-boring at Böhmisch-Brod.] *Jahrb. k.-k. Bergakad.* pp. 302–310.

This bore-hole has been put down by the Austrian State Railway Company in searching for a possible extension of the Coal Measures of Kladno under the New Red Sandstone plain. The depth reached was

2207 feet (Vienna) in January 1875, when the surface works were burnt down. Details of the apparatus and a section of the strata passed through are given in plates v., vi. The entire depth was in Permian (Dyas), consisting chiefly of alternations of red sandstones, sandy schists, and conglomerates of crystalline rocks at the bottom, the whole being inclined at angles varying from 18 to 30 degrees. H. B.

Resal, H. Note relative aux pertes du Haut Doubs et au moyen de les réduire. [The Water Losses of the Upper Doubs.] *Compt. Rend.* t. lxxx. pp. 209–211.

Notes of fissures through which the upper waters of this river escape. Along one small tributary, the Drujon, 50 fissures exist in a distance of 2 kilometres; their size increases yearly. By means of masonry the author has managed to stop some of the loss occasioned by these fissures during droughts. G. A. L.

Reusch, H. H. En Hule paa Gaarden Njös, Levanger Præstegjæld i Bergens Stift. [Cavern by Njös in Bergen Stift, Norway.] *Forh. Vid. Selk. Christ.* for 1874, pp. 275–284; 11 figs. in text, and 2 plates.

An account of the appearance and mode of origin of the cavern.

Reydellet, — de. Sur le terrain houiller de Puertollano (Espagne). [Coal Measures of Puertollano, Spain.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 160–165, 2 figs. in text. Translated in *Bol. Com. Map. Geol. Españ.* t. ii. pt. 3.

Notice of a small patch of Coal Measures, near Puertollano. The locality is coloured as Silurian in De Verneuil's map of Spain. No coal has yet been discovered; and the plant-remains found are those of the Upper Coal Measures of the coal basins of Central France, and have at the same time a somewhat Permian facies. G. A. L.

Rey-Lescure, —. Note sur les phosphatières de Tarn-et-Garonne et sur l'Hydrogéologie des environs de Montauban. [The Phosphatic Deposits of the Tarn-et-Garonne and the Hydrogeology of the neighbourhood of Montauban.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 398–430; 2 plates.

The first part (pp. 398–418) treats of the distribution and origin of the mineral phosphates of the department. These phosphates and those of the Lot are of geyserian origin; they follow in direction, and are due to the faults of the Oxfordo-Corallian limestones, although probably they only began to be ejected towards the close of the Cretaceous period, and did not reach their height till Middle and Upper Eocene times. The second part (pp. 418–426) is illustrated by a map (pl. xiii.) on a scale of 1 : 10,000, of the neighbourhood of Montauban, which is virtually a drift-map on which the underground water sheets are shown by a peculiar system of colouring, by means of which not only the area, but also the depth, of these sheets is represented. The third part consists of an explanation of an agro-geological and hydrological map of the Tarn-et-Garonne. G. A. L.

Richter, R. Aus dem Thüringischen Schiefergebirge. [Thuringian Slates.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 261–273; woodcut (section) and plate (fossils).

The Upper Silurian slates of the Thüringer Wald consist of a lower group rich in *Graptolites*, divisible into a lower and an upper series, separated by limestone with *Cardiola interrupta*, &c. (Interruptakalk); and of an upper group rich in *Tentaculites*, divisible into *Ctenacanthus*-beds, overlain by *Nereita*-beds, and these by *Cancellatus*-slates. For description of new fossils, see INVERTEBRATE PALÆONTOLOGY. F. W. R.

Rivière, E. Sur le dépôt quaternaire supérieur à la brêche osseuse de Nice proprement dite, ou brêche supérieure de Cuvier. [The Quaternary Deposit above the Osseous Breccia of Nice, or Upper Breccia of Cuvier.] *Compt. Rend.* t. lxxx. pp. 438–440.

Thinks that this upper deposit must be regarded as being formed by the accumulations of detritus due to Quaternary races similar to those found by him at Mentone and Beaulieu. G. A. L.

Rocco, G. B. [Greek Mines.] *N. Jahrb.* Heft iv. p. 394.

Note on a visit to a copper-mine at Argolis. The country-rock is serpentine, with marble; the ore is copper-pyrites in a gangue of quartz, calcspar, and iron-pyrites. F. W. R.

Roemer, Prof. Ferd. Ueber die Eisenerzlagerstätten von El Pedroso in der Provinz Sevilla. [Iron ores of El Pedroso, Seville.] *Zeitsch. deutsch. geol. Ges.* Heft i. pp. 63–69.

Describes deposits of iron ore belonging to the "Compañia de Minas y Fabrica de hierro del Pedroso."

——. Notiz über die Grube Gonderbach bei Laasphe im Kreise Wittgenstein. [Gonderbach mine.] *N. Jahrb.* Heft iv. pp. 378–381.

Describes the Gonderbach mine, in Prussia, which is worked in Lower Devonian slates. The vein strikes E. 15° to 30° S. (7 to 8 o'clock), dips S. 60° to 70°, and varies in width from 6 to 9 lachter. It carries argentiferous galena, pyrargyrite, polybasite, and native silver, with small quantities of fahlerz, copper pyrites, zinc-blende, and siderite. Since 1857 the vein has yielded 38,000 centner of lead ore, 570 centner pyrargyrite, and 3½ centner of native silver. F. W. R.

——. [Spanish Geology.] *N. Jahrb.* Heft v. pp. 521, 522.

Letter announcing the discovery by Mr. M'Pherson of evidence of glacial action in the western part of the Sierra Nevada. Refers also to the discovery of serpentine, produced by alteration of olivine rock, in the Serrania de Ronda. [See GEOLOGICAL RECORD for 1874, p. 373.] His observations of hand specimens of these rocks confirm Mr. M'Pherson's conclusions. F. W. R.

Roemer, Prof. Ferd. *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 3, pp. 707, 708.

Letter referring to Dr. Dames' paper (see GEOLOGICAL RECORD for

1874, p. 292), and calling attention to the occurrence of similar boulders near Dantzig. F. W. R.

Rose, Hugh James. Untrodden Spain, and her Black Country. Ed. 2. 2 vols. 8vo.

Rosenbusch, H. [Alsace and Lorraine.] *N. Jahrb.* Heft viii. pp. 849–851.

During the geological survey of Alsace and Lorraine, the writer has had the opportunity of studying the contact of clay-slate with granite. He has traced ordinary clay-slate into *Knotenschiefer* and *Fruchtschiefer*, and found it finally metamorphosed into andalusite-schist. F. W. R.

Rouville, Prof. Paul de. Introduction à la Description Géologique du Département de l'Hérault. [Geology of the Department of Hérault.] Pp. 224; 10 plates (sections and maps). 8vo. *Montpellier.*

Part 1 is devoted to "Fundamental Notions of Geology," and ends with divisions on Geological Maps and Sections, pp. 64–71. Part 2, pp. 73–147, is entitled "Applications to the Department of Hérault," and is divided thus:—i. Geological map, history, &c.; ii. Rocks of Hérault, their mutual relations; iii. Position of Hérault formations in the Geological scale, with a Table showing their range, from Recent to Silurian; iv. Distribution of the rocks. Geological Maps, especially the detailed maps of Hérault. Dislocations, &c.; v., vi. Mineralogical and Topographical Regions of Hérault; vii. Economic Results of the Mineral Composition, &c. of Hérault; viii. History of the progressive formation of the soil [= rocks] of Hérault.—Additions and Corrections, pp. 149–169, with a notice of the Hydrology of the Department.—Vocabulary, pp. 171–220. The sections are both ideal and actual. The geological maps are of the Region of Joncels and of the whole Department. W. W.

Royer, Clémence. Le Lac de Paris à l'époque quaternaire. [The Paris Lake in Quaternary Times.] Pp. 38. *Paris.*

Rutot, A. Note sur des cristaux de gypse rencontrés dans le Limbourg belge. [Crystals of gypsum found in Belgian Limburg.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin*, p. lvii.

Note of occurrence of rolled crystals of gypsum in gravel, which are derived probably from the Henis clay of the Upper Tongrian.

——. Sur le terrain crétacé de Liége. [Cretaceous Rocks of Liége.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin*, pp. lxv–lxvii.

Gives section and lists of fossils found in a quarry in the Walburge suburb of Liége, 500 metres from the Fond-Pirette colliery.

——. Note sur le gisement de fossiles herviens de la Croix Polinard, près Battice. [The Croix Polinard locality for Hervian fossils.] *Ann. Soc. Geol. Belg.* t. ii. *Bulletin*, pp. lxxv–lxxviii.

Gives a generic list of the fossils found.

——. Note sur la découverte, à l'est de Bruxelles, de l'argile glauconifère appartenant à la partie supérieure de l'étage lackénien. [The discovery, E. of Brussels, of the glauconitic clay of the Upper Lackenian.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 206–211.

Note of discovery in a cutting near the Cortenberg avenue.

Rutot, A. Note sur une coupe du système bruxellien observée à Ixelles. [Section of Bruxellian at Ixelles.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 212–222, one plate.

Describes the section, and gives a list of the fossils found there by M. Vincent, comprising 1 chelonian, 6 fishes, 2 cephalopods, 34 gasteropods, 14 lamellibranchs, and 1 echinoderm. Among these is a new species, *Scalaria tenuicosta*, Vincent. G. A. L.

Rütymeyer, L. Spuren des Menschen aus interglaciären Ablagerungen in der Schweiz. [Traces of man in the interglacial deposits of Switzerland.] *Archiv für Anthropologie*, Band viii. Heft 2, 1875.

Salvetat, —. Faits pour servir à l'étude du diluvium granitique des plateaux des environs de Paris. Lithologie des sables de Beynes et de Saint-Cloud (Seine-et-Oise). [Materials for the study of the granitic Drift of the plateaux near Paris. Lithology of the sands of Beynes and St. Cloud, Seine-et-Oise.] *Compt. Rend.* t. lxxxi. pp. 941–944.

Analyses of the sands and clays (kaolinic) are given.

Sandberger, F. [*Planorbis*-beds of Steinheim.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 2, pp. 447, 448.

Letter disputing Hilgendorf's conclusions as to the distribution of certain species or varieties of *Planorbis* at Steinheim.

Schantz, —. Die Tiefbauschächte der fiscalischen Königin-Luise-Grube bei Poremba in Ober-Schlesien. [Deep sinking for Coal at Poremba, U. Silesia.] *Zeitsch. Berg- Hütt. Salinenw.* Bd. xxiii. pp. 217–235. Abstract in *Proc. Inst. Civ. Eng.* vol. xliv. pp. 287, 288.

Describes new sinking near Gleiwitz. The thickest seam ("Pochhammer Flötz") is about 21 feet, and is expected to lie at about 455 yards from the surface. There are 9 workable seams above this. The total thickness of coal is 100 feet. H. B.

Schlehan, Adolph. Notizen über das Erzvorkommen von Laurion in Attika. *Ver. k.-k. geol. Reichs.* p. 66.

Merely a notice of a paper on the Laurium ore-deposits.

Schmidt, F. Einige Bemerkungen über die Podolisch-Galizische Silurformation und deren Petrefakten. [Silurian of Podolia and Galicia.] Pp. 21, with plate. 8vo. *St. Petersburg.*

The Silurian basin of Podolia and Galicia shows almost perfect identity with that of northern Europe, especially with the Silurians of Œsel and Gotland. It also resembles the Wenlock and Ludlow groups of England, with passage into Devonian, by means of beds containing *Pteraspis* and *Pterygotus*. On the other hand it differs greatly from the Silurians of Bohemia, having only a few Brachiopods in common. F. W. R.

Scholz, M. [Pomeranian fossils.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 2, pp. 445, 446.

Note on occurrence of *Inoceramus gryphoides* and *Ammonites cornucopiæ* in Jurassic clays of Schönwald, near Grimmen.

Schroeckinger, J. Freih. v. Ueber neue Anbrüche von Silbererzen in Joachimsthal und einige neue Mineralvorkommen in Oesterreich. [New occurrences of Silver Ores at Joachimsthal, &c.] *Verh. k.-k. geol. Reichs.* pp. 66–68.

The silver-ores lately met with in this mine were native silver, argentite, and pyrargyrite.

Schubert, —. Die nutzbaren Lagerstätten von Inowraclaw. [The Deposits of Useful Minerals at Inowraclaw.] *Zeitsch. Berg- Hütt. Salinenw.* Bd. xxiii. p. 1.

The district known as the Cujavisch tableland, in the eastern part of Bromberg, lying about 400 feet above the level of the Baltic, has been known to contain deposits of salt, a weak brine-spring having been discovered in a deep boring for water about 30 years back; but no steps were taken towards further discoveries, owing to the isolated character of the country and the comparative want of fuel. These difficulties having been to some extent obviated by the construction of railways, further search has been made, resulting in the discovery, at a depth of about 420 feet, of a bed of very pure rock-salt, which was not gone through in a further depth of 600 feet. Other borings have proved its extension over a length of about 1¼ mile. This salt is probably Permian, and is covered by gypsum-beds and limestones, the latter probably Upper Jurassic. In the lower ground below the salt-bearing rocks a considerable thickness of Tertiary sands and clays has been found, containing lignite, occasionally in beds up to 20 feet thick, and very pure iron-pyrites. The author considers that the joint association of salt, pyrites, and lignite renders the district well suited for the establishment of alkali-works. H. B.

Seguenza, Prof. G. Studii stratigrafici sulla Formazione pliocenica dell' Italia Meridionale. [S. Italian Pliocene.] *Boll. R. Com. geol. Ital.* pp. 18–31, 82–89, 146–153, 199–211, 276–283, 335–345.

A continuation (see GEOLOGICAL RECORD for 1874, p. 95). Summarizes results from the examination of the lower zone of the Newer Pliocene, showing that contemporaneous beds may differ entirely in fossils, from one being deep-water and the other a shore-deposit. The characteristic fossils of each facies are noted; about 19 p. c. are extinct species. Passes next to the upper zone. The columns of localities are divided into 2 categories, littoral and submarine, while there are 3 for localities with a mixed fauna—taken as a proof of the contemporaneity of the 2 categories. Over 900 species are noted in the list, which will be continued. E. B. T.

—— Sulla relazione di un viaggio geologico in Italia per T. Fuchs. [On Fuchs's Geological Journey, &c.] *Boll. R. Com. geol. Ital.* pp. 89–96.

Additional note in reply to Dr. Fuchs [see p. 65]. As the concretionary limestone is so irregularly bedded, its unconformability should not be assumed; reiterates that it should be considered Pliocene. Adds that the "argille scagliose" is a petrographical character occurring in several formations from Cretaceous to Miocene, its age depending on the fossils in it; repeats some conclusions as to the two zones of the Pliocene and their unconformity to each other. E. B. T.

Seguenza, Prof. G. Sulla relazione di un viaggio geologico in Italia di T. Fuchs. Terza nota. *Boll. R. Com. geol. Ital.* pp. 356–367 (one woodcut).

This third note in reply to Dr. Fuchs contains repetitions of arguments from his previous writings, with personal revindications and a summary of points disputed, with replies. E. B. T.

——. [Sicily.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 943–945; woodcut.

Letter on the Tertiary beds of Salice, on the N. coast of Sicily. A section is given.

Sexe, S. A. Om en gammel Strandlinie i fast Klippe. [On an old coast-line in solid rock.] *Forhand. Vid.-Selsk. Christ.* pp. 185–187.

The author examined a coast-line in one of the Norwegian fjords, which he shows cannot have been formed after the glacial period, and which accordingly is no proof of any rest in the rise of land after this period. E. E.

Stache, Dr. G. Eruptivgesteine aus dem Ortler-Gebiet und der Gebirgsgruppe des Zwölfer-Spitz im oberen Vintschgau. [Eruptive Rocks of the Ortler District.] *Verh. k.-k. geol. Reichs.* pp. 234–238.

Corrects former maps as to the amount of mica-schist; points out that newer eruptive rocks (andesites) form dykes, &c. in the gneissic schists. The eruptive rocks of the Zwölf Spitz, &c. will be subsequently described in full. E. B. T.

——. Die Eruptivgesteine des Zwölferspitz. Nachtrag und Berichtigung. [Supplementary note, &c.]. *Verh. k.-k. geol. Reichs.* pp. 327, 328.

Adds to his former note that the felspar is a plagioclase, and that the date of eruption is probably anterior to the Trias.

——. Neue Beobachtungen in den Schichten der liburnischen Stufe. *Verh. k.-k. geol. Reichs.* pp. 334-338.

Notes on railway-sections, &c. in Dalmatia, of the Liburnian (L. Eocene) stage. *Coskinolina*, n. gen. of Rhizopod allied to *Conulina*, and *Foibalia*, n. gen. allied to *Cerithium*, will be described in his forthcoming work on these beds. A table shows the subdivisions. E. B. T.

——. Le formazioni paleozoiche nelle Alpi Meridionali. [Palæozoic formation in the S. Alps.] *Boll. R. Com. geol. Ital.* pp. 52–55.

Translated from *Verh. k.-k. geol. Reichs.* (See GEOLOGICAL RECORD for 1874, p. 98.)

Stache, Dr. G. La formazione permiana nelle Alpi Meridionali. [Permian formation in the S. Alps.] *Boll. R. Com. geol. Ital.* pp. 55–57.

Translated from *Verh. k.-k. geol. Reichs.* 1874. (See Geological Record for 1874, p. 97.)

Stapf, Chavannes, Renevier, Lory, Gillieron, and Baltzer. Cinquante huitième session de la Société helvétique des Sciences naturelles réunie à Andermatt les 13 et 14 septembre 1875. [58th meeting of Helvetic Soc. of Nat. Sci. at Andermatt.] *Arch. Sci. Phys. Nat.* t. liv. pp. 310–313.

Geological notes on the district visited.

Stefani, Carlo de. Dei depositi alluvionali e della mancanza di terreni glaciali nell' Apennino della valle del Serchio e nelle Alpi Apuane. [Absence of glacial deposits in part of the Apennines and Apuan Alps.] *Boll. R. Com. geol. Ital.* pp. 1–18.

Retracts previous views as to there being evidence of glaciers in these districts, and holds that what were considered to be moraines by himself and others are in reality remains of alluvial deposits and avalanche débris, &c., cut up and denuded by later stream action. Smoothed and scored rocks are said to be entirely absent. E. B. T.

——. Considerazioni stratigrafiche sopra le roccie più antiche delle Alpi Apuane e del Monte Pisano. [Older rocks of the Apuan Alps, &c.] *Boll. R. Com. geol. Ital.* pp. 31–48, 73–81.

A continuation [see Geological Record for 1874, p. 99]. Above the Infra-Lias comes a limestone (calc. ceroide) used as ornamental stone, recognized by its *Ammonites* as L. Lias. Above comes red limestone differing from that of Lombardy in that it contains L. Lias *Ammonites*; it belongs to the upper part of the L. Lias; it is not thick. Succeeding is grey Lias, much thicker, belonging to the M. Lias. Cinnabar occurs in the gneiss and in both the Triassic and Liassic limestones. E. B. T.

——. Un brano di storia della geologia toscana, a proposito di una recente pubblicazione del Signor Coquand. [Fragment of Tuscan geology, &c.] *Boll. R. Com. geol. Ital.* pp. 180–192.

A short history of opinion on the geology of the Apuan Alps: mentions that Coquand in his last writings on the statuary marbles [see Geological Record for 1874, p. 53] has not distinguished those intercalated in the lower schists from those which are entirely above them; the latter are certainly Lias, the former from the fossils seem rather Triassic than Carboniferous. Moreover the Neocomian beds are present. E. B. T.

——. Dell' epoca geologica dei marmi dell' Italia Centrale. [Marbles of Central Italy.] *Boll. R. Com. geol. Ital.* pp. 212–227.

Covers partly the same ground as the preceding: compares limestones of other localities, *e. g.* Montagnola with the Lower Lias of the Apuan Alps, and finds that they have the same position or the same fossils. Separates the saccharoid limestones of Carrara, Spezia, and

Monte Argentaro from those of Campiglia, Cetona, Gerfalco, &c., the former being below the Infra-Lias, the latter above it. E. B. T.

Stefani, Carlo de. I Terreni subapennini dei dintorni di San-Miniato al Tedesco. [Subapennine deposits.] *At. Soc. Tosc. Sci. Nat.* t. i. p. 40.

——. Natura geologica delle colline della val di Nievole e delle valli di Lucca e di Bientina. [Geology of the valleys of Nievale, Lucca, and Bientina.] *At. Soc. Tosc. Sci. Nat.* t. i. p. 130.

——. Sull' asse orografico della catena metallifera. [Axis of the Metalliferous Chain.] *Pisa.*

Stoehr, Emilio. Notizie preliminari su le piante ed insetti fossili della formazione solfifera di Sicilia. [Fossils from the Sulphur deposits, &c.] *Boll. R. Com. geol. Ital.* pp. 284–287.

The Insects and Plants would ally the Sicilian sulphur formation with the Oeningen beds, and show that they were mostly deposited in fresh water. The writer classes the sulphur-beds as *Messinian*; they are conformable with the *Astian* above. E. B. T.

Struckmann, C. Ueber die Schichtenfolge des oberen Jura bei Ahlem unweit Hannover und über das Vorkommen der *Exogyra virgula* im oberen Korallen-Oolith des weissen Jura daselbst. [Upper Jurassic rocks in Hanover, &c.] *Zeitsch. deutsch. geol. Ges.* Heft i. pp. 30–35.

A new quarry near Ahlem has exposed a fine section of Upper Jurassic rocks. From this and neighbouring localities the following sequence is established:—1. Oxford or Heersumer beds overlie the Kelloway group; 2. Lower beds of Coralline Oolite; 3. Middle Coralline Oolite; 4. Upper Coralline; 5. Lower Kimeridge beds; 6. Middle Kimeridge, with *Pteroceras* beds; 7. Upper Kimeridge; 8. Lower Portland; 9. Upper Portland. Sequence of beds from 1 to 9 exposed within a section of 40 to 46 metres in thickness. The appearance of *Exogyra virgula* in Upper Coralline Oolite, with *Terebratula humeralis* and *Rhynchonella pinguis*, is specially notable. F. W. R.

——. [Upper Jurassic Rocks of Germany.] *N. Jahrb.* Heft viii. pp. 861–864.

Critical paper on Dr. Braun's work, "Der Ober-Jura im nordwestlichen Deutschland," especially dealing with his palæontological determinations. F. W. R.

Strüver, Johannes. [Italian Volcanoes.] *N. Jahrb.* Heft vi. pp. 619, 620.

Throws doubts on Ponzi's recognition of four periods of eruption in Latium. Doubts whether the Peperino really represents a separate (third) period of eruption. Has found leucite in ejected materials from old volcanoes of Latium. A new quarry on the Via Flamina in volcanic tufa has yielded true Somma bombs with beautiful zoned structure. F. W. R.

Studer, B. [Swiss Geology.] *N. Jahrb.* Heft viii. pp. 854, 855.

Two letters objecting to Tribolet's views on the Swiss "Eisenstein."

Stur, D. Vorkommnisse mariner Petrefacte in den Ostrauer Schichten in der Umgegend von M.-Ostrau. [Occurrence of marine fossils in the Ostrau beds.] *Verh. k.-k. geol. Reichs.* pp. 153–155.

The fossils found are *Bellerophon, Euomphalus, Orthoceras,* &c.; the first time that marine genera have been found among the coal-beds here; they occur at 3 levels. E. B. T.

——. Reise-Skizzen. *Verh. k.-k. geol. Reichs.* pp. 204–209.

7. Waldenburg. From fossils fixes the position of coals in the Rudofts pit: *Sphenopteris Karwinensis* occurs as in the Schatzlar beds of Ostrau, &c. 9. Kleinhennersdorf, near Liebau: in the collection of Hr. Hermann found a carapace of a new Eurypterid, from the Schatzlar beds. 10. Schatzlar: notes on the succession of the coals here under the Rothliegende. E. B. T.

Suess, Prof. E. Die Entstehung der Alpen. [Origin of the Alps.] *Vienna.* Pp. 186. Abstract in *Amer. Journ.* ser. 3, vol. x. pp. 446–451.

The formation of the Alps is here viewed in connexion with phenomena exhibited by other mountain chains throughout the N. hemisphere. Most of the chains of Europe and N. America are held to be due to lateral thrust in a N.W. or N. to N.E. direction, the steeper side being on the inside of the chain; in Asia as in the Himalayas, &c. the thrust was to the S., and the chain bends in a curve in that direction. From these and other examples it is concluded that mountain ranges are entirely due to lateral (not vertical) pressure. It is shown that the central crystalline rocks, even if eruptive, have no relation to the period of Alpine elevation. The pelagic nature of the deposits during the Triassic, &c. times in the Alps, Himalayas, &c. is noticed; the persistence of Palæozoic types in Secondary times too in these areas, &c. points to long-continued depression. In chap. II. the Alpine system, Apennines, Karpathians, &c. are examined, and are found to have a common origin. In chap. V. some exceptions to the general N. strike are noticed. In chap. VIII. the theory of geometrical arrangement is considered and rejected, and the cause of elevation referred to contractions of the earth-crust. E. B. T.

——. Der Vulcan Venda bei Padua. [The Venda Volcano, near Padua.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1, Bd. lxxi. pp. 7–13; plate.

An old volcano that had been subject to continued denudation would be recognized most surely by the remains of dykes, which would have a radiating direction. Describes these phenomena in Mt. Venda. The trachyte-eruption in one case has removed a mass of fossiliferous rock, which now lies imbedded between it and rhyolite. E. B. T.

Tardy, A. Le département de l'Ain à l'époque quaternaire. [The Ain in Quaternary times.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 479–481.

The deposits belong to three glacial phases.

Tardy, A. Sur les cavités naturelles des terrains jurassiques, en particulier dans l'Ain. [Natural cavities in Jurassic rocks, especially in the Ain.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 491–495.

Description of swallow-holes, caves, and crevasses in the Jurassic limestones in this district.

Thenius, —. [Peat-bogs of Austria and adjoining countries.] *Vienna.*

Timbal-Lagrave, E., and Dr. Jeanbernat. Exploration scientifique des environs de Montolieu (Aude). [Scientific exploration of the neighbourhood of Montolieu.] *Toulouse.*

Tombeck, —. Note sur les étages Oxfordien et Callovien de la Haute-Marne. [Oxfordian and Callovian of the Haute-Marne.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 22–26.

Concludes that the following are the recognizable divisions of these two series in that Department:—A. *Oxfordian:* 1. Clay with pyritous Ammonites (*A. cordatus, A. plicatilis, A. Babeanus, A. crenatus,* &c.); 2. Marls with *Am. perarmatus.* B. *Callovian:* 3. Marly fissile limestones with *A. Lamberti* and *A. athleta;* 4. Marly limestones with *A. Jason;* 5. Ferruginous marls with *A. coronatus* and *A. anceps;* 6. Ferruginous marls with *A. macrocephalus.* G. A. L.

——. Note sur la présence du Gault à Montiérender (Haute-Marne). [Gault at Montiérender.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 49, 50; 1 fig. in text.

Announces the discovery of a patch of Upper Gault in this locality, containing a fauna similar to that of Folkestone and Wissant.

——. Note sur les puits naturels du terrain portlandien de la Haute-Marne. [The Natural Wells of the Portlandian, Haute-Marne.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 168–174; 1 fig. in text.

Describes some swallow-holes in Portlandian limestone, which the writer believes to be due to epigenesis of overlying deposits of sulphide of iron now turned to hydrated peroxide, thus liberating a sufficient amount of sulphuric acid to act upon the limestone and erode the so-called natural wells or pot-holes. G. A. L.

Törnebohm, A. E. Geognostisk Beskrifning öfver Persbergets grufvefält. [Geological description of the iron-ore district of Persberg.] *Geological Survey of Sweden.* Pp. 21; 13 figures in text. 4to. *Stockholm.*

Describes the nature and mode of occurrence of the iron-ores in one of the most interesting mining districts of Sweden. The ores occur in large lenticular masses, with the same dip and strike as the surrounding stratified primitive rocks (eurite). Dislocations have crumpled and squeezed the rock-series very much. The author speaks of the probability of great stores of ore lying undiscovered. A coloured geological map, on the scale of 1 : 20,000, showing also the distribution of the mines, is annexed. E. E.

Törnebohm, A. E. Om lagerföljden inom Norbergs malmfält. [Stratigraphy of the Norberg Mining District.] *Geol. Fören. Stockholm Förh.* Bd. ii. pp. 329–335, plate.

The rocks of the region are granite, eurite, mica-schist, limestone with 'black ore,' bloodstone, and 'grönskarn' with 'black ore.' The plate is a coloured geological map, scale 1 : 40,000. G. A. L.

——. [Glaciation of North Germany.] *N. Jahrb.* Heft v. pp. 519, 520.

Although it has been shown that the polished surfaces of the Hohburg cannot be referred to glacial action [see GEOLOGICAL RECORD for 1874, p. 72], the author appeals to evidence of ice-action obtained during a recent visit to Wurzen. He identifies many of the boulders found between Wurzen and Leipzig with Scandinavian rocks, and cites Credner's opinion in favour of their transport by floating ice. F. W. R.

Toula, Dr. Franz. Aufschlüsse in den Schichten mit *Congeria spathulata* (Congerienstufe) und *Cardium plicatum* (sarmatische Stufe) am Westabhange des Eichkogels zwischen Mödling und Gumpoldskirchen. [Sarmatian, &c. beds of the Eichkogel.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 1, pp. 1–7, with 3 woodcuts.

Notice of sections; the age of the beds proved by fossils.

Trautschold, H. Etwas aus dem tertiären Sandstein von Kamüschin. [Tertiary Sandstone of Kamüschin.] *Bull. Soc. Imp. Nat. Mosc.* 1874, no. 3 (1875), p. 128.

——. Die Scheidelinie zwischen Jura und Kreide in Russland. [Boundary between Jurassic and Chalk in Russia.] *Bull. Soc. Imp. Nat. Mosc.* 1874, no. 3 (1875), p. 150.

——. Reisenotizen aus dem Sommer 1874. [Notes of travel (geological) during the summer of 1874.] *Bull. Soc. Imp. Nat. Mosc.* 1874, no. 3 (1875), p. 179.

Trentinaglia-Telvenburg, J. Ritter v. Das Gebiet der Rosanna und Trisanna (Sannengebiet in West Tyrol), mit besonderer Berücksichtigung der orographischen, glacialen, botanischen, zoologischen, geognostischen und meteorologischen Verhältnisse. [On the orography, glaciers, . . . geology, &c. of the Rosanna and Trisanna district, W. Tyrol.] 204 pp. *Vienna.*

Tribolet, Maurice de. Sur le grès de Taviglianaz du Kienthal, dans les Alpes Bernoises. [The Taviglianaz grit of the Kienthal, Bernese Alps.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 68–72; 1 fig. in text.

Proves that at this place the age of this much-disputed horizon is Tertiary, the Taviglianaz grit (=*grès moucheté* of Lory) being here intercalated between two series of *Flysch* (Eocene). G. A. L.

——. Geologie der Morgenberghornkette und der angrenzenden Flysch- und Gypsregion am Thunersee. [Swiss Geology.] *Zeitsch. deutsch. geol. Ges.* Heft i. pp. 1–29; with plate (sections).

Account of recent work on the Geological Survey of Switzerland. The country examined includes the great *massif* of the Morgenberghorn, and the region of gypsum and of Flysch which stretches between it and the Lake of Thun and the Suldthal. The occurrence of the following formations is described in detail:—Flysch, Nummulitic formation, Seewerkalk (Upper Chalk), Gault, Schrattenkalk, Neocomian, and Ironstone formation (*Eisensteinbildung*). F. W. R.

Tribolet, Maurice de. [Gosau beds in Transylvania.] *N. Jahrb.* Heft i. pp. 52, 53.

Describes a collection of fossils from Monorostia, on the Maros. The fossils occur as impressions in a reddish ferruginous sandstone. Twenty-four species have been determined. This locality for the Gosau beds was not previously known. F. W. R.

——. [Swiss geology.] *N. Jahrb.* Heft ii. pp. 174, 175.

Corrects certain points in Swiss geology, such as the age of Studer's "Ironstone Formation" (*Eisensteinbildung*). This formation, widely spread in the Bernese Oberland, has always been regarded as of Tertiary age; but the author's observations show that it is Jurassic. F. W. R.

——. [Ironstone formation of the Oberland.] *N. Jahrb.* Heft vi. pp. 622, 623.

The occurrence of *Ammonites Murchisoniæ* in the Ironstone formation leads Studer to refer it to the *lower* part of the Dogger. The author believes that it represents both upper and lower Dogger, and that it presents a fusion (*Verschmelzen*) of the *Amm. Humphreyi* beds (lower) and *Klaus* beds (upper), which elsewhere are separated. F. W. R.

Trutat, A. Essai sur les Pyrénées. [Essay on the Pyrenees.] *Bull. Soc. Hist. Nat. Toulouse*, t. viii. p. 379.

Trutat, E. Sur les dépôts glaciaires de la vallée inférieure du Tech. [Glacial deposits of the Lower Tech valley, W. Pyrenees.] *Compt. Rend.* t. lxxx. pp. 1108, 1109; and, under a slightly different title, in *Bull. Soc. Hist. nat. Toulouse*, t. ix. p. 178.

Describes a section in the Moraine des Trompettes which shows Pliocene beds resting upon upturned edges of Glacial deposits, thus proving, for the first time according to the author, the existence of two distinct glacial epochs, the older of which belongs to the Tertiary. G. A. L.

Vacek, M. Umgebungen von Hohenembs. [Country around Hohenembs.] *Verh. k.-k. geol. Reichs.* pp. 229, 230.

Note on part of the Cretaceous beds of the Vorarlberg; these ridges show a more or less steep cliff towards the N., and slopes (Alps) covered with pasture towards the S. E. B. T.

Vadot, N. Le Creusot: son histoire, son industrie. *Paris.* (From notice in *Iron*, vol. vi. pp. 452–454.)

Describes the Coal-field here. The ironstone is got from Jurassic beds at Mazenay.

Vanden Broeck, Ernest. Observations sur la *Nummulites planulata* du Paniselien. [The *N. planulata* of the Paniselian.] *Bull. Soc. Géol. France,* 3 sér. t. ii. pp. 559–566.

Shows that the specimens of *N. planulata* found in the Paniselian are derived from the underlying denuded Ypresian beds, thus upsetting the last argument which was used for placing the Paniselian in the lower series. G. A. L.

Vanden Broeck, Ernest. Note sur la présence de l'argile oligocène sous les sables pliocènes du Kiel près d'Anvers. [Presence of Oligocene clay beneath the Pliocene sands of the Kiel near Antwerp.] *Ann. Soc. Mal. Belg.* t. x. 1875, *Bull.* pp. lxxv–lxxviii.

Describes a recent exposure showing, for the first time in this district, the junction between the Pliocene and Oligocene. The clay which represents the latter is the equivalent of the Clay of Boom, and is marked by *Septaria*, which are much eroded and perforated by lithophagous mollusks; on its denuded surface lies the Pliocene *Panopæa Menardi* zone (=sands of Edeghem). The break represents the entire Miocene series, or Upper Miocene according to some authors. G. A. L.

Vicuna, G. El Hierro en Viscaya. [Iron in Biscay.] *Rev. Min.* sér. B, t. i. pp. 130, 137, 142.

Vidal, Luis M. Geologia de la Provincia de Lérida. *Bol. Com. map. geol. Españ.* t. ii. pt. 3.

Geological report on the province of Lerida. Silurian, Devonian, Carboniferous, Triassic, Jurassic, Cretaceous, Tertiary, and Diluvial deposits are described. A catalogue of the different fossils collected (134 species) is given, with the localities where they were found. A plate with 17 geological sections is attached. J. McP.

Viedenz, —. *N. Jahrb.* Heft iii. p. 287.

Note on a giant's cauldron (*Riesentopf*) in the High Tatra.

Vieillard, E. F. Le terrain houiller de Basse-Normandie, ses ressources, son avenir. [Coal Measures of Lower Normandy.] Pp. 166; 5 plates. *Caen.*

——. Compte rendu de l'Excursion géologique au Jobourg près Cherbourg (Manche). *Bull. Soc. Linn. Norm.* sér. 2, t. viii. p. 389.

Vieillard, E., and G. Dollfus. Étude géologique sur les terrains crétacés et tertiaires du Cotentin. [Cretaceous and Tertiary Beds of the Cotentin.] *Paris.*

Vieira, —. [Iron-ore deposit of Rancié.] *Rev. Géol.* t. xii. pp. 92–94.

Distinguishes three systems of veins, the directions of which (N. 110° E., N. 140° E., and N. 70° E.) can be recognized likewise in the deposits of Lercoul, Miglor, and Châteauverdun, and indeed in nearly all the iron-ore localities of the Ariège. G. A. L.

Vilanova y Piera, Juan. Salinas de Villarubia de Santiago. *Ann. Soc. Españ. Hist. Nat.* vol. iv. pt. 3.

Describes the rock-salt deposits of Villarubia de Santiago in the province of Madrid. Chloride of lime is associated with sulphate of soda, glauberite, and gypsum. J. McP.

Villot, —. Étude sur divers gisements de combustibles dans la Province de Teruel (Espagne). [Various deposits of Fossil Fuel in the Province of Teruel, Spain.] *Bull. Soc. Sci. Indust. Marseille,* t. ii. pp. 19–34, 65–88; 3 folding plates of fac-simile sketch maps and sections.

Chap. I. geological, from a strictly mining point of view; Chap. II. commercial and industrial. The deposits described are 4 to 28 kilometres from Montalban. Different opinions have been held as to their geological position; the author divides them into 4 groups:—1, lowest, light subcrystalline limestones (Middle Lias to Urgonian); 2, first lignite horizon with yellow siliceous limestones, *Trigonia*-beds, &c. (Aptian); 3, a marked mass of blue and brown clays capped by variegated sands with iron-concretions (Cenomanian and Turonian); 4, a series of limestones similar to those of 1, but much higher in the series (Carantonian and Rhotomagian). Geographically the deposits are classed as follows:—Basins of Gargallo, Ariño, and Utrillas, the last comprising the most important lignitic deposits. Some of the lignites described are of a quality equal to those of Fuveau, whilst the others are inferior, but good enough to be worked under favourable circumstances. None are coking or gas coals; but they might be used for nearly every other industrial purpose, especially the harder qualities. Analyses and statistics are given. G. A. L.

Vincent, G. Note sur les dépôts paniséliens d'Anderlecht près de Bruxelles. [Paniselian of Anderlecht near Brussels.] *Ann. Soc. Mal. Belg.* t. ix. pp. 69–82; 1 fig. in text.

At this spot the Paniselian rests upon Upper Ypresian sands, and the Bruxellian beds are entirely wanting. 40 species are enumerated as having been found in the Paniselian, of which 20 are also found at Mont Panisel (Mons), whilst 17 only are Bruxellian. Indeed some of the most characteristic Bruxellian fossils are absent in the Anderlecht Paniselian, in which only 3 Ypresian species are found. The writer concludes that the Paniselian is a passage-bed between the Lower and Upper Eocene. G. A. L.

Waters, A. W. On true Belemnites from the Bartonian Nummuline limestone of Ronco, North Italy. *Trans. Manch. Geol. Soc.* vol. xiii. part x. pp. 342–344.

The deposits are believed to be Eocene.

Watts, W. L. On the Volcanic Geology of Iceland. *Proc. Geol. Assoc.* vol. iv. no. 4, pp. 214–220.

More than 20 mountains have been in eruption during the historic period. Some of the chief of these are described. All the lavas of Hecla are basaltic. Myrdals Jökull now produces only heated water and sand, but at one time it ejected lava. The greater volcanic activity of Iceland seems to have retreated northwards, to the Vatna Jökull (of which the great Skapter Jökull is but a small part). This is a vast frozen tract, the peaks of the volcanoes protruding through the snow; this district has not yet been explored. (See also a letter, "The Volcanoes of Iceland," in the *Times*, Sept. 16, giving an account of eruptions in August 1875.) W. T.

Watts, W. L. Snioland, or amongst the Jökulls and Fjälds of Iceland. With map and photographs. *London.*

Contains some descriptive geology.

Wiik, F. J. Öfverblick af södra Finlands geologi. [Review of the Geology of Southern Finland.] *Geöl. fören. Stockholm Förh.* Bd. ii. pp. 189–196 and 228–236.

An account of the characters and divisions of the eruptive rocks, the metamorphic and the post-Tertiary beds. The eruptive rocks, which of all are the most abundant, are as follows, from the oldest to the newest:—1. *Gneissgranite*; 2. *Granite-porphyry*, *syenitic granite*, and *diorite*; 3. *Gabbro* and *hyperite*. The metamorphic beds are divided into the Laurentian gneiss (red and grey gneiss, hornblendic gneiss, hornblende-schist, and crystalline limestone) and the Huronian schist (crystalline clay-slate, mica-schist, quartzite-schist, diorite-schist, &c.). The post-Tertiary time is divided into three periods, during which (1) the *till* (Swed. "Krosstensgrus"), (2) the gravel-ridges (kames, eskers, Swed. "åsar"), and (3) the terraces (raised beaches) have been formed. E. E.

Woldřich, Dr. J. N. Ein Menschenschädel im diluvialen Löss bei Mannersdorf in Niederösterreich. [Human Skull in Loess, in Lower Austria.] *Verh. k.-k. geol. Reichs.* pp. 140–142.

The Loess lies at some height above the alluvium of the plains. The skull in the present case, though found 2 m. deep, evidently was of secondary deposition, being washed out of the overlying prehistoric bed (*Culturschicht*). E. B. T.

——. Hercynische Gneissformation bei Gross-Ždikau im Böhmerwald. [Hercynian Gneiss, &c.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 3, pp. 259–292, map and 2 plates, and *Verh. k.-k. geol. Reichs.* p. 52.

The "Hercynian" is Gümbel's upper division of the Böhmerwald gneiss: its varieties are described, and next its relations to the granite, porphyry, &c. of the district, of which a microscopic analysis is given. Quartz occurs, in quantities worked for glass-making, as a contemporaneous deposit, and as a product of decomposition in the gneiss. Limestone occurs in the upper part of some thickness, and with the same dip as the gneiss; it contains garnets. Graphite occurs in the lower part, but not in quantity or pure enough to be of value. Considerations adverse to its plutonic origin are added. E. B. T.

Wolf, H. Die geologischen Aufschlüsse auf der Staatsbahnstrecke Beraun-Rakonitz. [Sections on the railway between Beraun and Rakonitz.] *Verh. k.-k. geol. Reichs.* pp. 52–56.

The sections show chiefly the lower unfossiliferous Silurian beds (Přibram shales), alum and aphanitic shales intersected by much greenstone (diabase, aphanite, and porphyry). The beds are much bent and twisted. E. B. T.

Wolf, H. Die Phosphorite des Lavantthales. [Phosphates of Lavant valley.] *Verh. k.-k. geol. Reichs.* pp. 145–147.

Above the Lignite beds [Miocene] worked here come sands, marls, &c., of which 2 feet are full of phosphatic concretions. The percentage of calcic phosphate is 63·8. A cubic foot of marl would yield 5–10 lb. of concretions. E. B. T.

——. Der Bergsturz bei Unterstein auf der Salzburg-Tiroler Bahn. [Landslip on Salzburg and Tyrol railway.] *Verh. k.-k. geol. Reichs.* pp. 175–181.

The rock in which the damage to the tunnel occurred was chlorite-schist.

——. Gebiet am Žbruč und Nieclzavafluss. *Verh. k.-k. geol. Reichs.* pp. 221, 222.

Silurians in three divisions, above which is the Chloritic Chalk and Miocene, are the rocks mentioned.

Zittel, K. Nachträgliche Bemerkungen zu dem Aufsatz über die Gletschererscheinungen in der baierischen Hochebene. [Supplementary remarks on Glacier phenomena in the Bavarian Highlands.] *Verh. h.-k. geol. Reichs.* pp. 46–48.

Notices the occurrence of Horse in preglacial Boulder drift of the Starnberg lake; the first fossil found in preglacial beds of Upper Bavaria. E. B. T.

Zugmayer, H. Ueber bonebedartige Vorkommnisse im Dachsteinkalke des Piestingthales. [Rhætics of the Piestingthal, &c.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 1, pp. 79–88 (with 2 cuts).

Notices the discovery in L. Austria of a conglomeratic bone-bed with Rhætic fossils, coprolites, fish-remains, &c., and describes the contact with the Dachstein beds below; the passage is gradual, beds with *Avicula contorta* alternating with Dachstein limestones at the junction, so that no abrupt division would represent the facts. The Brachiopoda beds or Starhemberg facies of the Rhætic was found high up in the section, but is unequally developed in different localities. E. B. T.

See also:—

Baltzer, A. Eruptions of Vulcano: *post*, under PHYSICAL GEOLOGY.

Barrois, C. Channel Tunnel: p. 4.

Danvers, F. C. Channel Tunnel: p. 10.

Desmarest, N. Former Junction of England and France: p. 12.

Helland, A. Lakes, &c., Norway: *post*, under PHYSICAL GEOLOGY.

Hesse, E. A. von. Channel Tunnel: p. 18.

Hicks, H. Cambrian, &c., European area: p. 20.

Pettersen, K. Gneiss-granite, N. Norway: *post*, under PETROLOGY.

Topley, W. Geology of the Weald. Refers to the Boulonnais: p. 40.

——. Channel Tunnel: p. 40.

Reports on Channel Tunnel: p. 46.

3. *ARCTIC REGIONS.*

Bessels, Dr. —. On Polaris Bay. *Bull. Soc. Géogr.* pp. 291–299.

Brown, Dr. R. Papers on the Physical Structure of Greenland. *Royal Geographical Society's Manual of Arctic Geography and Ethnology*, pp. 1–74.

1. The Greenland Coast-line; 2. The Interior of Greenland; 3. Greenland Glaciers and Sea-ice; 4. Glacier System of Greenland; 5. Action of Sea-ice; 6. Rise and fall of Greenland Coast; 7. Application of facts regarding Arctic Ice-action as explanatory of glaciation and other ice-remains in Britain; 8. On the Formation of Fjords; 9. The northern termination of Greenland; 10. Debatable Points regarding the Physical Structure of Greenland. Dr. Brown believes that the Greenland ice-sheet overspread the country after the close of the Tertiary period. An important geological deposit is forming off the coast, and especially in the ice-fjords, by the deposition of the creamy mud from the sub-glacial streams. This deposit cannot be distinguished from ordinary brick clay. The Glaciers carry little moraine matter. A former rise of the Greenland coast is indicated by the occurrence of a fossiliferous clay everywhere along the coast; at one place it was found on a bank 500 ft. high, overlooking glaciers. The submergence now going on is indicated by the encroachment of the sea on buildings of many of the old settlements; the rate of fall being perhaps about 5 ft. in a century. The present form of fjords is due to glacier-action on a previously existing depression. R. E., Jun.

——. Geological Notes on the Noursoak Peninsula, Disco Island, and the Country in the vicinity of Disco Bay, North Greenland. *Trans. Geol. Soc. Glasg.* vol. v. pp. 55–112, geological map.

Daubrée, Prof. —. Relation sommaire de l'expédition scientifique à la Nouvelle Zemble, commandée par M. le professeur Nordenskiöld, à bord du *Proefven*, de Juin à Août 1875. [Summary of proceedings of the Nova Zembla Expedition in the *Proefven.*] *Compt. Rend.* t. lxxxi. pp. 770–773.

Note of Jurassic beds found near the Matotchkin Scharr at an altitude of 3000 feet.

De Rance, C. E. Arctic Geology. *Nature*, vol. x. pp. 447, 467, 492, 508.

A condensed account of the Ice of Greenland, the Cryolite, the Cretaceous and Miocene formations of Mid-Greenland, the Ovifak meteorites, the geology of E. Greenland, and the Arctic-American Archipelago. The glacial conditions and geology of Spitzbergen and Bear Island; the extent of the Carboniferous deposits in N.W. America; and the former continental areas and the homotaxeous relationship of the Tertiary and Cretaceous formations of Greenland with those of other countries are also treated of. C. E. De R.

Helland, A. Om de isfyldte Fjorde og de glaciale dannelser i Nord-grönland. [The ice-filled fjords and the glacial formation in N. Greenland.] 68 pp.; 1 plate. 8vo. *Christiania.*

Account of observations made during a journey in N. Greenland in the summer of 1875. The glaciers, their motion and denuding forces, the moraines, the coastlines, &c. are described. The glacial condition of Greenland does not now reach its greatest development, but it is identical with the state of the western Norwegian Fjord valleys during the end of the glacial period. The greatfjords of Greenland, stretching for many miles into the dry land, have on the whole the same characters as the Norwegian fjords. E. E.

Kjellman, F. R. Svenska Polar-expeditionen år 1872–1873, under ledning af A. E. Nordenskiöld. [Swedish Polar Expedition of 1872–73.] Pp. 252; 14 figs. in text, and 3 plates. 8vo. *Stockholm.*

Chap. 12 (pp. 274–303) of this work is written by **Nordenskiöld,** and relates to several geological facts, principally respecting the glaciers and the inland ice of the north-east of Spitzbergen. A topographical map of Spitzbergen is annexed. E. E.

Nordenskiöld, A. E. Utkast till Isfjordens och Belsounds geologi. [Geology of the Icefjord and Bellsound.] *Geol. fören. Stockholm Förh.* Bd. ii. pp. 243–260, 301–322, and 356–373, Tafl. 13 (map), 19 figs. in text.

Description of the glaciers and of the following formations:—1. Laurentian granitic and gneissoid rocks; 2. Heklahook beds (Silurian?); 3. Liefde Bay beds (passage between Devonian and Carboniferous?); 4. Carboniferous (3 divisions); 5. Trias (6 divisions); 6. Jurassic; 7. Horizontal beds of diabase (with analyses by **Lindström** and **Teclu**); 8. Cretaceous; 9. Miocene; 10. Post-Miocene and Quaternary; 11. Recent. Several subdivisions of the Carboniferous and Miocene beds are made. Fossils from almost every formation are enumerated, and the localities described. Figures in the text show the stratification of the beds; the extension of the inland ice and the glaciers is given on a map. E. E.

——. Redogörelse för den Svenska polarexpeditionen år 1872–1873. [Account of the Swedish Polar Expedition in 1872–73.] Supplement to *K. Svenska Vet. Akad. Handl.* Bd. ii. no. 18, pp. 1–132; 17 figs. in text, 1 pl., and map of Spitsberg.

Gives a geological and partly palæontological description of the parts of Spitzbergen which were visited; the inland ice and the glaciers are described. A list of minerals from Spitzbergen and Bear Island is given. Several meteorological and physical observations are made. At the end is a list of papers and monographs (168 in number) of the Swedish Arctic Expeditions. E. E.

Payer, J. The Austro-Hungarian Polar Expedition 1872–4. *Journ. R. Geogr. Soc.* vol. xlv. pp. 1–19; map (not geological).

The geological features of Franz Josef Land coincide with those of parts of N.E. Greenland. Dolerite is the prevailing rock in Austria Sound; there is also a Tertiary carboniferous sandstone with small beds of brown coal. Upheaval is denoted by the raised beaches in Austria Sound, where also all the low islands are covered by a glacial cap. The mountains as a rule are 2000 to 3000 ft. high, or in a few instances 5000. The glaciers occupying the depressions between these form mural precipices on the coast 100 to 200 ft. high. R. E., Jun.

Steenstrup, K. J. T. Om de Nordenskiöldske Jærnmasser og om Forekomsten af gedigent Jærn i Basalt. [The Nordenskiöldian iron-masses and the occurrence of native iron in basalt.] *Vid. Medd. Nat. Foren. Kjöbenhavn*, no. 16–19, pp. 284–306; 2 plates.

Thinks that the large blocks of native iron which Nordenskiöld discovered at Disko, North Greenland are not meteorites, but that the iron belongs to the neighbouring basalt. E. E.

Weiprecht, Carl. Grundprincipien der arktischen Forschung. [Fundamental principles of arctic research.] *Trieste.*

Manual of the Natural History, Geology, and Physics of Greenland and the neighbouring Regions; prepared for the use of the Arctic Expedition of 1875 . . . . edited by **Prof. T. Rupert Jones.** Together with Instructions . . . . for the use of the Expedition. Pp. vi, 86 and xii, 783; maps. 8vo. *London.*

The "Instructions" contain the following:—**Prof. H. E. Roscoe.** On the Detection of Meteoric (Cosmical) Dust in the Snow of the Arctic Regions, pp. 10, 11.—**Prof. A. C. Ramsay** and **J. Evans.** General Instructions for Observations in Geology, 68–77.—**Prof. N. S. Maskelyne.** Instructions for making Observations on, and Collecting Mineralogical Specimens, 77–82.—**J. W. Judd.** Instructions on the Observations which should be made in case Volcanoes or Evidences of Volcanic Action should be met with, 83-86.

The "Manual" consists chiefly of reprints of and extracts from papers in various publications, amongst which the following are geological:—Notes on the . . . . Geology of the Voyage of the Polaris, p. 321.—**J. R. MacCulloch.** Geological Notes on Baffin's Bay, 324, 325.—**Sir E. Sabine.** Notes on Meteoric Iron used by the Esquimaux, 325–327.—**Sir C. L. Giesecke.** The Mineralogical Geology of Greenland from Cape Farewell to Disko, 327–335; On the Mineralogy of Disko Island, 335–341; and On the Cryolite of West Greenland, 341–344.—**J. W. Tayler.** On the Cryolite of Evigtok, Greenland, 344–347; and On the Veins of Tin-ore at Evigtok, 348, 349.—**Sir C. L. Giesecke.** Catalogue of a . . . . Collection of Minerals from the

Arctic Regions, 349–351.—**Dr. P. C. Sutherland.** On the Geological and Glacial Phænomena of the Coasts of Davis' Strait and Baffin's Bay, 352–367.—**Prof. F. B. Meek.** Fossils from the West Coast of Kennedy Channel, 368.—**Prof. O. Heer.** On the Miocene Flora of North Greenland, with a list of Memoirs on the subject by the Editor, 368–373.—**R. H. Scott.** Notice of Heer's 'Flora fossilis Arctica,' 374–377.—**Prof. Heer.** The Miocene Flora and Fauna of the Arctic Regions, 378–385; and the Cretaceous Flora and Fauna of Greenland, 386–389.—**Prof. A. E. Nordenskiöld.** Account of an Expedition to Greenland, 389–447.—**Dr. W. Flight.** On Meteoric Irons found in Greenland, 447–467.—**Dr. R. Brown.** Geological Notes on the Noursoak Peninsula, Disco Island, &c., 467–482.—**Dr. Pingel.** On the Gradual Sinking of Part of the South-west Coast of Greenland, 482, 483.—**H. Howorth.** Recent Elevations of the Earth's Surface in the Northern Circumpolar Region, 483–496.—**Dr. H. Rink.** Rocks and Minerals of Greenland, 499, 497.—**J. W. Salter.** On Arctic Silurian Fossils, 531–536.—**Sir R. I. Murchison.** On the Occurrence of numerous Fragments of Fir-wood in the Islands of the Arctic Archipelago; with Remarks on the Rock-Specimens brought from that Region, 536–540.—**R. Etheridge.** Notes on some Rock-Specimens from the Arctic-American Archipelago (1874), 541.—**Prof. S. Haughton.** On the Geology of the Parry Islands and neighbouring Lands, 542–550.—Geology of the Parry Islands, 551, 552.—**Dr. Bessels.** Notes on Polaris Bay, 553.—Geology of East Arctic Greenland (**Dr. F. Toula, Prof. Heer**), 586–590.—**Dr. K. Vrba.** On Rock-Specimens from South Greenland, 590, 591.—Spitzbergen, 591–595.—**T. Payer.** Franz-Joseph Land, 596–599.—**H. Woodward.** On the Glaciation of the Poles of the Earth (reprinted from paper noticed under PHYSICAL GEOLOGY, see *post*), 600–604.—List of Works on Greenland, 750–754. W. W.

4. *AMERICA*.

Andrews, Prof. E. B. A comparison between the Ohio and West Virginia sides of the Alleghany Coal-field. *Amer. Journ.* ser. 3, vol. x. pp. 283–290.

Denies that the Pittsburgh seam is formed of several coalescing seams, and believes it to be the best datum-line of the Ohio coal-field. Except on the W. Virginian side of the outcrop, the distance from this seam to the base of the productive Coal Measures keeps much the same, from 500 to 800 feet. There, however, the distance is more than 3000 feet. These facts lead to the conclusion that the so-called Conglomerate is of no general importance as an horizon; hence the terms Millstone Grit and Coal Measure Conglomerate, if they cannot apply to a uniform horizon in the N. American Carboniferous system, had better be retained only for their lithological meaning. G. A. L.

Anon. (W. J. F.). Canadian Scientific Research in 1874. *Amer. Journ.* ser. 3, vol. ix. pp. 236, 237. From *Montreal Gazette*, 15 Jan., 1875.

Account of the geological work done, during 1874, by Mr. James Richardson in British Columbia, by Mr. G. M. Dawson in the Western Boundary districts, and by Prof. Bell in the North-west Territories. G. A. L.

Anon. Coal in Patagonia. *L'Institut,* Feb. 17. Note in *Amer. Journ.* ser. 3, vol. ix. p. 323.

A detailed report of the discovery has been published by M. F. Arnal. The locality is Vaqueria, in the Straits of Magellan; there are 3 seams, together 26 feet thick. Age of beds not stated. G. A. L.

——. Geological Survey of Wisconsin. *Amer. Journ.* ser. 3, vol. ix. pp. 398–400.

Brief account of the work done since the organization of the Survey under Dr. Lapham in 1873.

——. The Geology of New Mexico. *Amer. Journ.* ser. 3, vol. x. pp. 152, 153.

Notice of Prof. Cope's results while on the Wheeler U.S. Survey in 1874, chiefly as regards the country for 40 miles W. of the Sierra Madre. The Triassic beds forming part of the axis of this range have been found to be lacustrine. G. A. L.

——. Report on a plan for the reclamation of the alluvial basin of the Mississippi River subject to inundation. Pp. 15, maps. *Washington.*

"Contains much matter on the levels, flood, and alluvial basin of the Mississippi."—*Amer. Journ.* ser. 3, vol. x. p. 240.

Anon. Coal in Canada. *Coll. Guard.* vol. xxix. p. 743.

Note of the discovery, by the Canadian Geological Survey, of a coal-field, estimated at 25,000 square miles, extending from the Athabasca river on the N. to Red Deer river on the S. One seam is reported as being more than 18 feet thick, and of good quality. G. A. L.

——. Discovery of Coal in Brazil. *Coll. Guard.* vol. xxix. p. 746.

Note of the discovery of a considerable deposit of coal of first-rate quality in the province of Rio Grande do Sul, by the manager of the Jeronymo Collieries. [From the *Brazil and River Plate Mail.*] G. A. L.

——. The Iron Mountains and Coal Basins of Alabama. *Coll. Guard.* vol. xxx. pp. 844–846.

Reprint of a report issued by the Louisville and Nashville Railroad Company. It consists of a general account of the coal and iron deposits, with analysis of coal. Details are given of 4 borings in Jefferson County. G. A. L.

——. The Nitrate Formation of Chile. *Journ. App. Sci.* vol. vi. p. 23.

Nitrates of soda and borax were found in making the surveys for the Transatlantic Railroad. A detailed report has been published at Santiago, whence the information is taken. W. W.

——. Die Geyserregion am oberen Yellowstone. [Geyser region of the Upper Yellowstone.] *Globus*, Bd. xxvii. pp. 289–294, 305–309, 321–325, 337–341.

——. Production of Iron in the United States. *Mining World*, vol. viii. p. 812.

Describes ore-deposits of Pennsylvania and Lake Champlain, and springs of petroleum and gas.

——. *Iron*, vol. vi. n. ser.

Mining Enterprise in Tennessee, p. 2.

Mineral Resources of Panama, p. 135.

The Minerals of Missouri, pp. 259–290. A notice of the Geological Survey Report, by **G. C. Broadhead.** (See Geological Record for 1874, p. 111.)

Mineral resources around Chattanooga, p. 710.

Barcena, Mariano. On the Mesozoic formation of Mexico and its characteristic fossils. Pp. 37. *Mexico.*

Bell, I. L. Notes on a visit to the Coal and Iron Mines and Iron-works in the United States. 8vo. *London.* Also *Iron*, vol. vi. n. ser.

Coal, Anthracite, Bituminous Coals, Magnetic Iron-ore, Hæmatite, Clay-Ironstone, and Black-band are noticed.

Berg, Dr. Karl. Eine naturhistorische Reise nach Patagonien. [Natural History Journey to Patagonia.] Petermann's *Mittheilungen*, Bd. xxi. pp. 364–372.

Chiefly zoological and botanical, but contains some geological notes.

Berthoud, E. L. On the Occurrence of Uranium, Silver, Iron, &c. in the Tertiary Formation of Colorado Territory; with Notes by **Dr. G. A. Koenig** and **Mr. Gabb.** *Proc. Ac. Nat. Sci. Philadel.* pt. ii. pp. 363–366.

Describes the Lyden coal-mine. The mineral vein appears to take the place of a Tertiary coal-bed.

Bradley, Prof. Frank H. On the Silurian age of the Southern Appalachians. *Amer. Journ.* ser. 3, vol. ix. pp. 279–288, 370–383.

A detailed description under the following heads:—1. Introduction; 2. Silurian of East Tennessee; 3. From Athens to Murphy; 4. From Knoxville to Murphy; 5. The Marble Belt.—Thinks that the "pyrocrystalline" and "Taconic" rocks of the Blue Ridge region are probably all Silurian instead of being Azoic or Laurentian; also that the uplift and metamorphism of all this region took place in post-Carboniferous times. G. A. L.

Brockway, Charles J. Mineral deposits in Essex Co., Mass., especially in Newbury and Newburyport. Pp. 60, map. 12mo. *Newburyport.*

Brown, Charles B., and **J. G. Sawkins.** Reports on the Physical, Descriptive, and Economic Geology of British Guiana. Pp. iv, 297 [paging of pp. 3, 4 repeated]. Plate (sections), Map in pocket, 49 woodcuts. 8vo. *London.*

General Report on the Physical, Descriptive, and Economic Geology. Pp. 5–30. I. General Physical Features. II. General Descriptive Geology, with details of well-sections. III. Economic Geology, with analyses of soils, list of heights, and Catalogue of Rocks and Minerals. Then come separate Reports on Districts as follows:—1. Report of the N.W. portion of British Guiana, 31–37. 2. Cuyuni and Supinaam Rivers, 38–44. 3. Puruni and Mazaruni Rivers, 45–51. 4. River Demerara, 52–55. 5. A portion of the Essequebo River, and of the Pacaraima Mountains, 56–74. 6. Excursion from Georgetown to Mapuri Rapids, &c., 75–95. 7. Rewa and Quitaro Rivers, &c., 96–107. 8. Central Portion of British Guiana, 108–129. 9. District bordering on the Curiebrory, &c. Rivers, 130–201. 10. Corentyne River, 202–232. 11. Berbice and Demerara Rivers, 233–255. 12. Mazaruni River, 256–257. The Kaietur Waterfall is reported on in pp. 278–297. "It is produced by the Potaro River flowing over a sandstone and conglomerate tableland into a deep valley below, with a total fall of 822 feet," 741 of which are in a perpendicular column. The 3 sections are on the same scale horizontally as the map, 13·6 miles to an inch. The map, dated 1873, has 9 colours, the divisions being Alluvium, Sand and Clay, Sandstone, Greenstone, Schist and Gneiss, Hornblende Rock, Quartz porphyry and Felstone, Granite and Syenite, and Quartz. W. W.

Chapman, Prof. E. J. An Outline of the Geology of Ontario, based on a Subdivision of the Province into six Natural Districts. *Can. Journ.* n. ser. vol. xiv. pp. 580–588.

Gives a general outline of the geological features of the Province, which is divided, upon geological grounds, into the following areas:—1. The Lower Ottawa District; 2. The Gananoque and Back Townships District; 3. The Lake Ontario District; 4. The Erie and Huron District; 5. The Manitoulin District; 6. The District of the Upper Lakes. H. A. N.

Chase, —. On the Auriferous Sands of Gold Bluff. *Proc. Calif. Ac. Sci.* vol. v. pt. 3, pp. 246, 247; 3 woodcuts (views and section).

The gold comes from the bluffs.

Cole, G. F. The Saltpetre Deposits of Peru. *Journ. Soc. Arts*, vol. xxiii. no. 1190, pp. 875–880.

The district referred to comprises the seaboard of Peru, Bolivia, and part of Chile, and consists of a succession of fertile valleys separated by wide arid wastes of high ground. Saltpetre has only been worked at the southern end of Peru, where the coast is precipitous and with very high cliffs, from the top of which the land rises gently to a plateau of 3400 feet. The surface of the plateau is mostly fine sand. "The mineral containing saltpetre is called 'caliche'": it "generally lies at depths of from 1 to 10 yards below the surface, and sometimes resembles in appearance loaf sugar, and at others rock-sulphur; and again it appears white, crossed with bluish veins." The methods of working and of extracting the nitrate are described. Two analyses of Caliche are given, showing it to consist of nitrate of soda and common salt, with 10 or 12 per cent. of insoluble matters. "The mineral is found in layers of from a few inches to three yards in thickness." The rocks of the district are noticed. The saltpetre-deposits occur on the slopes of hills, and in no case on the pampa above. The author suggests that these deposits may have been derived from the destruction of lava by water, at a time when there was more rain in the country than now, enough to form rivers where now there are none. W. W.

Cook, Prof. George H. Geological Survey of New Jersey. Annual Report of the State Geologist for the year 1874. Pp. 116. *Trenton*, 1874 (not published till 1875).

——. Geological Survey of New Jersey. Annual Report of the State Geologist for the year 1875. Pp. 41, map (not geological). [? Published in 1876, though dated 1875.] 8vo. *Trenton.*

Report on the Fire and Potter's Clays of Middlesex County, pp. 10–12. Water Supply, with analyses and well-sections, 24–33. Miscellaneous Analyses (iron-ores, limestone, clay), 34–38. W. W.

Cooper, Dr. J. G. Remarks on California Coal. *Proc. Calif. Ac. Sci.* vol. v. pt. 3, pp. 384–386.

The coal is Tertiary.

——. California during the Pliocene Epoch. *Proc. Calif. Ac. Sci.* vol. v. pt. 3, pp. 389–392.

The climate was tropical. The country consisted of peninsulas and islands. The end of this tropical epoch was marked by volcanic outbursts and elevation. The Northern Drift does not reach to California; but there were large glaciers in Post-Pliocene times. W. W.

Cooper, Dr. J. G. California in the Miocene Epoch. *Proc. Calif. Ac. Sci.* vol. v. pt. 3, p. 401.

Marine shells occur along the Coast Range and the foot-hills of the Sierra Nevada.

——. The Eocene Epoch in California. Are there Really no Eocene Strata? *Proc. Calif. Ac. Sci.* vol. v. pp. 419–421.

Notes the absence of Eocene Fossils, and the theories to account for it. Discusses the question, "Have the Poles changed?"

——. Note on Tertiary Formation of California. *Ibid.* p. 442.

Cope, Prof. E. D. On the Transition Beds of the Saskatchewan District. *Proc. Ac. Nat. Sci. Philadel.* p. 9.

——. The Wheeler Geological Survey of New Mexico for 1874. *Amer. Nat.* vol. ix. pp. 49–52.

An account of the proceedings of one of the parties of the Wheeler Expedition of 1874, to which the writer was attached as palæontologist. The most important discovery made was that of a great series of lacustrine beds corresponding with the lowest fossiliferous beds of Wyoming, and containing an abundant Mammalian fauna. These beds cover an area of about 3000 square miles between the Chama and San Juan rivers, are L. Eocene, and contain the remains of Vertebrata, many being new. H. A. N.

——. The Geology of New Mexico. *Proc. Ac. Nat. Sci. Philadel.* pt. ii. pp. 263–269.

Refers to some of the geological work of Wheeler's Survey, and to the Vertebrate remains found; describes *Typothorax coccinarum* from the Trias of the Rocky Mountains; gives a section of the Eocene rocks, and an estimate of the thickness of the Mesozoic rocks W. of the Sierra Madre. Concludes with a discussion with **Dr. Le Conte.** W. W.

——. On the Cretaceous Beds of the Galisteo. *Proc. Ac. Nat. Sci. Philadel.* pt. ii. pp. 359, 360.

Remarks on Prof. J. J. Stevenson's paper on the Geological Relations of the Lignitic Groups of the Cretaceous (see p. 131).

Coxe, E. B. A new method of sinking Shafts. *Coll. Guard.* vol. **xxix.** pp. 47–49, 156; 3 figs. in text.

Reprint of paper noticed in the GEOLOGICAL RECORD for 1874, p. 114.

D[ana], J. D. The Gulf of Mexico in the Miocene. *Amer. Journ.* ser. 3, vol. ix. pp. 320, 321.

Quotes a letter from Mr. W. M. Gabb. The coal-bearing beds of Costa Rica are Miocene.

Dana, Prof. James D. On Dr. Koch's Evidence with regard to the Contemporaneity of Man and the Mastodon in Missouri. *Amer. Journ:* ser. 3, vol. ix. pp. 335–346; and *Pop. Sci. Rev.* no. **56,** July 1875, pp. 278–290.

Goes through the evidence on this point in Dr. Koch's pamphlets, and concludes that "there is sufficient reason for regarding Dr. Koch's evidence of the contemporaneity of Man and the Mastodon [in N. America] as *very doubtful.*" G. A. L.

Dana, Prof. James D. On Southern New England during the melting of the Great Glacier. *Amer. Journ.* ser. 3, vol. x. pp. 168–183, 280–282, 353–357, 409–438; 8 figures in text.

The Champlain deposits of S. New England prove that during the closing part of the melting of the Great Glacier there was a vast flood, that during the Glacial Period and the beginning of the Champlain Period there was no marine life in Long Island Sound, and that the region subsided together with the more northern regions. The paper is divided into the following parts:—I. The flood from the melting Glacier: 1. Newhaven region, with map and 5 illustrative sections; 2. Outside of the Newhaven region. II. Absence of marine life, &c. (as above). III. Reindeers in Southern New England. IV. Depression of the land, or amount of subsequent elevation. V. Conclusions (pp. 433–438): 1. The amount of depression in S. New England during the melting of the Glacier was probably 10 to 20 feet; 2. The river-valley formations are not marine; 3. The height of the flood was the chief cause of the height of the terraces; 4. The heights of the streams during the flood are given (from 80 to 237 feet above mean high tide level); 5. The pitch of the stream during the flood is given; 6. The Champlain was a Fluvial Period. G. A. L.

Dawson, G. M. British North-American Boundary Commission. Report on the Geology and Resources of the Region in the Vicinity of the Forty-ninth Parallel, from the Lake of the Woods to the Rocky Mountains; with Lists of Plants and Animals collected, and Notes on the Fossils. Pp. 379. *Montreal*, *London*, and *New York*.

In ascending order the great rock-divisions occurring in the districts visited are:—Laurentian, Huronian, L. and U. Silurian, Devonian, Carboniferous (doubtfully present), Permian and Trias wanting, Cretaceous, Tertiary Lignite series, and, lastly, Glacial. **Principal Dawson** gives an Appendix on the Fossil Plants. G. A. L.

——. On the Superficial Geology of the Central Region of North America. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 603–623; map and 2 woodcuts.

The district described is bounded on the E. by the great rocky plateau known as the "Laurentian Axis," on the W. by the Rocky Mountains. These are the great watersheds of the country; but there are two others, transverse to these, which are not marked by any grand physical feature. The drift-covered regions are classed as follows:—1. Plateau of N. and E. Minnesota; 2. Lowest Prairie-Level and Valley of the Red River; 3. Second Prairie-Plateau; 4. Third Prairie-Plateau, stretching up to the base of the Rocky Mountains. The Laurentian Axis is much glaciated; and there is evidence of glaciers in the Rocky Mountains. The former was glaciated by land-ice, which floated off during the submergence of the central country, and carried the drift material with it. As submergence went on, the sea reached the base of the Rocky Mountains; and hence was derived the quartzite drift which chiefly occurs over the higher prairies. W. T.

Dodge, W. W. Notes on the Geology of Eastern Massachusetts. *Proc. Boston Soc. Nat. Hist.* vol. xvii. pt. 3, pp. 388–419.

I. Crystallines; II. Stratified Rocks, Slates, Conglomerates, Norfolk County Basin; [III.?] Eruptives; [IV.?] Glacial Effects.

Endlich, Dr. F. M. Report on the Mines and Geology of the San Juan Country. *Bull. U.S. Geol. Surv. Territories*, ser. 2, no. 3, pp. 151–164; plate (Map of Baker's Park).

Four sets of trachytes, 7000 to 8000 feet aggregate thickness, are followed by rhyolite, dolerite, and basalt. Schistose rocks underlie the volcanic. The lodes strike N.E. or N.W., their visible outcrops being often of great vertical height. 15 are named and mapped, their strikes, ores, and the extent of work being given. The gangue is mostly quartz: the ores are galenite with silver, sphalerite, pyrite, chalcopyrite, gold, psilomelane, and fahlerz or freibergite (antimonial tetrahedrite with silver, iron, and zinc). The lodes are probably of late Cretaceous age. The map shows Carboniferous (2 divisions), Cretaceous (2 divisions), Metamorphic and Volcanic rocks. W. H. D.

Fontaine, Wm. M. On some points in the Geology of the Blue Ridge in Virginia. *Amer. Journ.* ser. 3, vol. ix. pp. 14–22, 93–101.

A detailed description, chiefly of the Pre-Silurian rocks of this district, which appear to consist of a thick series of argillites (the line of demarcation between them and the Silurian being clearly shown) and of a variety of highly metamorphic rocks from granite and gneiss to epidosite, and an eruptive-looking rock called provisionally "pinite porphyry." G. A. L.

——. On the Primordial Strata of Virginia. *Amer. Journ.* ser. 3, vol. ix. pp. 361–369, 416–428; 3 figs. in text.

Detailed descriptions of the lie of the rocks in the Blue Ridge and adjoining regions.

Ford, S. W. Note on the Discovery of a new locality of Primordial Fossils in Rensselaer County, N. Y. *Amer. Journ.* ser. 3, vol. ix. pp. 204–206.

The locality is E. of the village of Lasingburgh; and the fossils were found in a brecciated limestone: they were perfect specimens of the pygidium of *Conocephalites (Atops) trilineatus*, *Hyolithes Americanus*, *Obolella nitida*. The writer regards this "lime rock" as the equivalent of his limestone band No. 1 at Troy. G. A. L.

Foster, Ernest Le N. Something about Colorado; its Mines and Minerals. *Ann. Rep. Miners' Assoc. Cornwall* for 1874, and part of 1875, pp. 63–65.

Coal, probably Tertiary, is mined in several places; iron-ore is little worked at present. The gold and silver lodes form the principal mineral resources of the territory. The average yield of the gold lodes in the Central City district is reckoned at 3 oz. per ton of 2000 lbs. The silver mines are in the Georgetown district. The lodes occur in gneiss, granite, and syenite. The ores are true silver minerals, such as pyrargyrite, mixed with galena, zinc blend, and highly argentiferous fahlerz. C. L. N. F.

Frazer, Prof. Persifor. On the Trias of York County, Pa. *Proc. Ac. Nat. Sci. Philadel.* p. 123.

——. On the Structure of the York County Valley Limestone, and on the Micro-photography of Minerals. *Ibid.* pp. 128, 129.

There is a fault along the S.E. half of the valley, instead of a double anticlinal.

——. Origin of the Lower Silurian Limonites of York and Adams Counties, Pennsylvania. *Proc. Amer. Phil. Soc.* March; abstract in *Amer. Journ.* ser. 3, vol. ix. p. 471.

Attributes the origin of the ore to the presence of the pyrites in the slates. The beds usually lie between the slate and L. Silurian limestone; but the latter is generally little, if at all, acted upon or eroded, and often is not even stained. G. A. L.

Gabb, W. M. Notes on Costa Rica Geology. *Amer. Journ.* ser 3, vol. ix. pp. 198–204.

A résumé of the geology of the district of Talamanca, the S.E. corner of Costa Rica, a region of about 3000 sq. miles. The high mountains (6000 feet minimum height) are chiefly made up of granitic rocks, with no gneiss. On this mass in the Tiliri district are a few hundred feet of Tertiary rocks dipping seaward at a decreasing angle. These beds are highly metamorphosed close to the granites; they form an extension of the Great W. Indian Miocene deposits. The conglomerates in this series are entirely made up of clay-stone pebbles, the source of which is unknown, and they contain no traces of granitic or other crystalline débris. Porphyritic dykes cut through both the granitic and Miocene rocks. Pico Blanco, supposed to be a volcano, is merely an extreme type of an ordinary granite mountain. Gold occurs in the metamorphosed Miocene rocks, and always at some distance from the granites, but not in paying quantity. A few patches of Post-Pliocene rocks line the coast, which is low and swampy. On the beach very pure iron-sand occurs in large deposits. G. A. L.

——. Costa Rica Geology. *Amer. Journ.* ser. 3, vol. ix. p. 320.

Corrects height of Pico Blanco, which is 11,877 feet. The volcanic peak Irazu is all but extinct.

——. Note on the Age of the Cretaceous of Vancouver Island and Oregon. *Amer. Journ.* ser. 3, vol. x. p. 308.

Claims to have first, with Prof. Whitney, put on record the age of the Nanaimo Coal. [See **Selwyn**, p. 129.]

Gatschet, Alb. S. Statistische Übersicht der Steinkohlengewinnung in der Nord-Amerikanischen Union. [Statistics of Coal in the United States.] *Petermann's Mittheil.* Bd. xxi. pp. 286–297; map.

Gives a summarized description of each coal-field, with full details as to produce. The map (scale 1 : 13,500,000) shows the limits of—1. The New England anthracite district; 2. The E. Pennsylvania anthracite coal-field ; 3. The Appalachian bituminous coal-field ; 4. The Michigan ; 5. The Illinois or Central ; 6. The Missouri coal-fields. G. A. L.

Gerber, Henrique. Geographical Notes on the Province of Minas Geraes. Translated by **Capt. R. F. Burton.**

One section is devoted to Geology and Mineralogy. The Province is divided into three regions by lines parallel with the coast, characterized by the following rocks:—1. Granite and gneiss forming mountain masses, with some quartzite and hornblende rock ; 2. Gneiss alternating with mica-schist, talc-schist, with veins of itacolumite (laminated talcose quartz) ; 3. Stratified rocks, "traumatic schists," with limestone. In the latter are great caverns in which have been found remains of Mammals, chiefly Pliocene. Associated with the 2nd class are gold, specular iron, argentiferous galena, and copper-ores. Some mineral springs are noticed. F. D.

Gorceix, —. Résultats d'une première exploration de la province de Rio-Grande du Sud (Brésil). [Results of a preliminary exploration of the province of Rio Grande do Sul, Brazil.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 55, 56.

Notices:—I. The Coal-field of Candiote, which Carruthers and Plant have regarded as Jurassic, but which reminds the author of the Tertiary formations of the East. II. The Gold-bearing veins of Lavras. The direction of the *bed-veins* is S. 60° W. As a mean, their contents yielded from 30 to 35 grammes a ton. G. A. L.

——. Notice sur le gisement et l'exploration de l'or à Lavras, province de Rio-Grande du Sud. [The Gold Deposit at Lavras, in the province of Rio Grande do Sul, Brazil.] *Bull. Soc. Indust. min. St. Etienne*, sér. 2, t. iv. p. 361.

Hall, Prof. J. Geology of the Southern Counties of New York, and particularly of the Catskill Mountain Region. *Amer. Assoc.*

Harkness, Dr. H. W. A Recent Volcano in Plumas County. *Proc. Calif. Ac. Sci.* vol. v. pt. 3, pp. 408-412.

Describes a crater and lava-bed. Thinks that the volcano has been active within 25 years.

Harrington, B. J. Notes on the Iron Ores of Canada. *Iron*, n. ser. vol. v. pp. 550, 648, 806 ; vol. vi. pp. 74, 106. [? From Report of Geological Survey of Canada, see GEOLOGICAL RECORD for 1874, p. 127.]

The information here given is in part compiled from various sources. Notes of the geological localities are added. Magnetites, p. 74 ; Hæmatites, pp. 106, 166, 390 ; Titanic ore, or Ilmenite, p. 390 ; Limonite, pp. 486, 808. W. T.

Hayden, Dr. F. V. Note on some Peculiar Forms of Erosion in Eastern Colorado, with Heliotype Illustrations. *Bull. U.S. Geol. Surv. Territories*, ser. 2, no. 3, pp. 210, 211, pls. vii., viii.

Castellated sandstones of the Monument Creek (Lignitic) group and of Carboniferous (?) age respectively. A few stratigraphical remarks are added. W. H. D.

——. Notes on the Surface Features of the Colorado or Front Range of the Rocky Mountains. *Bull. U.S. Geol. Surv. Territories*, ser. 2, no. iv. pp. 215–231, plates ix., x.

These notes are accompanied by two panoramic views of the range of mountains referred to, for the purpose of rendering the geological features clearer. The first is that of the Colorado or Front Range, taken from a point near Denver; the second is the Pike's Peak Group, taken from a bluff east of Monument Creek. R. E., Jr.

Hébert, Prof. E. Documents sur la géologie du bassin du MacKenzie, recueillis par le Père **Petitot**. [Notes on the Geology of the Basin of the MacKenzie, collected by Father **Petitot**.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 87–93.

The introduction (pp. 87, 88) includes a list of 9 Devonian species sent home by Father Petitot, and named by MM. Hébert and Munier-Chalmas. These are identical with European species of that age. The notes (pp. 88–93) open with a description of the materials used to make stone implements by the natives; they are jade, petrosilex, serpentine, phonolite, kersanton, and orthoclase felspar. Of these, serpentine and phonolite are found in place in the district, the others occurring as rolled pebbles, &c. The writer next describes the enormous amount of detritus and wood carried down by the river; then notices some fuel-deposits on the foot of the Rocky Mountains, which alternate with petroleum-schists in actual combustion. Lastly, a band of lakes is mentioned which seem to be connected by underground channels only. G. A. L.

Hillyer, E. Structure of Stone Mountain, a granitic mass in Georgia. *Amer. Journ.* ser. 3, vol. x. pp. 234, 235.

In this pure whitish granite "there is no doubt that below the surface lamination a piece could be quarried out a quarter of a mile in length if man could command the means." G. A. L.

Hitchcock, Prof. C. H. Evidence of Glacial Action upon the summit of Mt. Washington, N. H. *Amer. Journ.* ser. 3, vol. x. pp. 305, 306.

Note of a communication made at Meeting of the Amer. Assoc. 1875. Small boulders of "Bethlehem gneiss," which must have been carried 12 miles at least, have been found on this mountain 6293 feet above the sea-level, in the usual *moraine profonde* of the Northern Drift. G. A. L.

Hunt, Dr. T. Sterry. Supplementary Note on the Geology of the North Shore of Lake Superior. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 58, 59.

Various opinions have been advanced with regard to the age of these Sandstones; the author suggests that the red sandstones of Thunder

Bay, whether identical with those of the southern shore or not, and whether Paleozoic or Mesozoic, are really newer than the adjacent cupriferous amygdaloids, and are not to be confounded with the sandstone strata which, on both sides of the lake, are found interstratified with these, and provisionally adopts Prof. Bell's name of "Nepigon Group" for them. W. W.

Hunt, Dr. T. Sterry. The Ore Knob Copper Mine and some Related Deposits. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 123–131 (with discussion).

This mine, in N. Carolina, is on a true fissure-lode, cutting the gneiss and mica-schist, which dip 45° S.E., the lode being vertical, with a course N. 60° E. Both country rock and lode are decomposed to some depth. At a certain depth the porous gossan is charged with carbonate and red oxide of copper, and lower down is replaced by rich sulphuretted ores. The outcrop has been traced for 1900 feet; and the breadth of the lode varies from 6 to 14 feet. The lode is compared with others in Tennessee and Virginia, regarded as deposits of later date than the beds in which they occur. W. W.

——. The Coals of the Hocking Valley, Ohio. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 273–278.

This may be taken as included in the pamphlet of 1874, noticed in the GEOLOGICAL RECORD for that year, p. 120.

——. The Decayed Gneiss of Hoosac Mountain. *Proc. Boston Nat. Hist. Soc.* vol. xviii. pp. 106–108.

Ingersoll, Ernest. The Sand-dunes of the San Luis Valley. *Amer. Nat.* vol. ix. pp. 375, 376.

Shows how the action of the wind on these sand-dunes produces appearances like those seen on sandy beaches.

Irving, Roland. Note on some New Points in the Elementary Stratification of the Primordial and Canadian Rocks of South Central Wisconsin. *Amer. Journ.* ser. 3, vol. ix. pp. 440–443.

Tabulates the equivalence of the divisions of these systems thus:—

	S. Central Wisconsin.	*Mississippi Bluffs.*	*Minnesota River.*
Canadian.	St. Peter's Sandstone.	St. Peter's Sandstone.	St. Peter's Sandstone.
	Main body of Limestone, 80 to 120 feet.	Lower Magnesian Limestone, 200 to 250 ft.	Shakopee Sandstone, 70 ft.
	Madison Sandstone, 35 ft.		Jordan Sandstone, 50 ft.
	Mendota Limestone, 30 ft.		St. Lawrence Limestone.
Primordial.	Lower or Potsdam Sandstone.	Lower or Potsdam Sandstone.	Lower or Potsdam Sandstone.

G. A. L.

Jackson, W. H. Descriptive Catalogue of the Photographs of the United States Geological Survey of the Territories for the years 1869 to 1875. Ed. 2, pp. 81. 8vo. *Washington.* [Ed. 1 noticed in Geological Record for 1874, p. 121.]

Jones, Capt. W. A. Report upon the Reconnaissance of North-Western Wyoming, including Yellowstone National Park, made in the summer of 1873. Pp. 326; maps.

Lawson, J. S. [Letter on bones, &c. found at Scatchel Head, Whidley Island.] *Proc. Calif. Ac. Sci.* vol. v. pt. 3, pp. 379, 380.

Le Conte, Prof. Joseph. On some of the Ancient Glaciers of the Sierra Nevada. *Amer. Journ.* ser. 3, vol. ix. pp. 126–139, one fig. in text.

Describes the larger tributaries of the Great Lake Valley Glacier, viz. the Truckee Cañon and Donner Lake Glaciers, the Cascade Lake Glacier, the Emerald Bay Glacier, the beds of which all run into Lake Tahoe. That this lake was once occupied by ice the writer thinks is certain; that it was scooped out by the Lake Valley Glacier he considers rather less certain. From its position it may be a "plication hollow;" but all the other Sierra lakes which he has seen owe their origin to glacial agency. All the land for 3 or 4 miles from the lake margin, both N. and S. of Rubicon Point, is formed of confluent glacial deltas. The moraines of these tributary glaciers are all parallel; there are no terminal moraines; neither are there true lateral moraines. Believes that glacier erosion is not only a grinding and scoring, but also a crushing and breaking—an alternate rough hewing and planing. G. A. L.

Leeds, Prof. A. R. Asphaltic Coal from the shale of the Huron River, Ohio. *Ann. Lyc. Nat. Hist. N. York*, June.

Seam 2 inches thick, with much sulphate of baryta. Occurs in oil-shales of Pennsylvania and Ohio.

Lesley, Prof. J. P. Coal-beds in the Subcarboniferous of Pennsylvania. *Amer. Journ.* ser. 3, vol. x. pp. 153, 154.

Announces the discovery of several "baby coal beds" in No. x. Upper or White Catskill, Rogers' Vespertine, Berea Grit of Newberry. This explains the 2 coal beds in the face of the Alleghanies and the 14 small ones W. of the Peak mountain in Wythe County, S. Virginia.
G. A. L.

——. Second Geological Survey of Pennsylvania. Report of Progress for 1874. *Harrisburg.*

Includes report on the Petroleum of Pennsylvania by **H. E. Wrigley.**

Little, George. Report of progress of the Mineralogical, Geological, and Physical Survey of the State of Georgia for the period from Sept. 1 to Dec. 31, 1874.

Loew, Oscar. Lieutenant J. M. Wheeler's zweite Expedition nach Neu-Mexico und Colorado, 1874. [Wheeler's 2nd expedition to New Mexico and Colorado.] *Petermann's Mittheil.* Bd. xxi. pp. 441–454.

Gives an account of the expedition, with notes on the ores and mineral springs of Colorado, on a great find of Tertiary mammal-remains near the Gallinas Mountains, on the hot springs N.E. of Abiquin, and generally on the geology of the districts visited, finishing with a few theoretical considerations as to the origin of old climatal changes. G. A. L.

Ludlow, Capt. William. Report of a Reconnaissance of the Black Hills of Dakota, made in the summer of 1874. Pp. 124, 3 maps (1 geological). 8vo. *Washington.*

Geological Report, by **Prof. N. H. Winchell**, pp. 25–66 (7 woodcuts). Gives an account of the observed facts in a journalistic form, with details of sections, under the following heads:—From the Red River of the North to Fort Abraham Lincoln. Entrance into the Black Hills. Through the centre of the Black Hills. From Custer Park to Bear Butte. From Bear Butte to Fort Abraham Lincoln. Then follows a "Résumé of Geological Results," under the heads Cretaceous, Jurassic, and Triassic, Carboniferous Limestone, Potsdam Sandstone, Schists and Slates, Granite, Summary Section of the Rocks of the Black Hills, Structural System of the Black Hills. The Geological Map of the Black Hills is on a scale of 6 miles to an inch, and shows 11 divisions.

Palæontological Report, by **G. B. Grinnell**, pp. 71–74.

Description of New Fossils, by **R. P. Whitfield**, pp. 96, 97, plate. The new species are *Obolus pectinoides* (Potsdam Sandstone, French Creek, Dakota) and *Terebratula Helena* (Cretaceous, Black Hills). W. W.

Macfarlane, Dr. James. The Coal-regions of America: their Topography, Geology, and Development. With a coloured geological map of Pennsylvania, &c. Pp. xviii, 695. Ed. 3; with a Supplement for the year 1874. Plates and woodcuts. 8vo. *New York.*

Anthracite, pp. 7–82. *Bituminous Coal*, pp. 83–504. *Triassic Coal*, pp. 505–528. *Cretaceous Coal*, pp. 529–596. *Appendices*: Origin of Coal; Rocks among which Coal is found; Iron-ores of the Coal-regions; Statistics, &c., pp. 597–690. W. W.

Machattie, A. T. On a Deposit of Gypsum in Southern Utah. *Chem. News*, vol. xxxii. p. 56.

Analysis of gypsum forming a large mound at White Mountain, on the road from Salt Lake City to the southern portion of Utah.

Mansell, F. W. Argentine and St. John del Rey (Gold Mines). *Min. Journ.* vol. xlv. p. 1359.

Describes the lodes at Piqué and Morro Velho, Brazil.

——. Hydraulic Gold Mining. *Min. Journ.* vol. xlv. p. 1359.

Describes the Big Blue Lead, California.

Marcou, Jules. Untersuchungen in Californien. *Verh. k.-k. geol. Reichs.* pp. 215, 216.

Mentions Miocene rocks as forming the mountains round St. Clara Valley, &c., very like the Molasse and Nagelfluh of Switzerland. Near Fort Tejon are Eocene beds with *Cerithium*. E. B. T.

——. [California.] *N. Jahrb.* Heft ix. pp. 960, 961.

Letter describing an expedition to a little-known part of S.E. California. All the rocks between Los Angelos, San Fernando, San Gabriel, and the Francisquito Pass are Tertiary, the greater part being Miocene, resembling the Swiss Molasse and Nagelfluh. In the San Fernando Basin limestone occurs, with fossils apparently of the age of the Œningen beds. Well-developed Eocene beds occur near Fort Tejon. True Cretaceous rocks are not known by the writer, as the so-called Cretaceous beds are believed by him to be Tertiary. F. W. R.

Marsh, Prof. O. C. Ancient Lake-basins of the Rocky Mountain Region. *Amer. Journ.* ser. 3, vol. ix. pp. 49–52.

These lake-basins are of Eocene, Miocene, and Pliocene age, the fauna of each formation being distinct, as well as different from the recent. The author regards the Green River basin deposits as Eocene, although Hayden and others look upon them as Miocene. These deposits are at least 6000 feet thick. S. of the Uintah Mountains was another Eocene lake, and a third of the same age probably existed in E. Oregon, W. of the Blue Mountains. The Miocene lake-basins of the region are, that of the "*Mauvaises Terres*" district, S. of the Black Hills, known by the White River beds, and an older lake, the John Day River basin, on the Pacific slope in Central Oregon. The only Pliocene lake-basin is that of Niobrara, occupying the same area as the Miocene "Bad Lands" district. G. A. L.

Murray, Alexander. Geological Survey of Newfoundland. Report of Progress for the Year 1874. Pp. 75. 8vo. *St. John's.*

Geological Features (Gander Bay, &c.), pp. 20–23. Economics, 23, 24. Report of Geological Exploration in Port-à-Port and St. George's Bays, by **James P. Howley**, pp. 27–74. Distribution of the Formations, 39–56, with details of sections. The formations are L. Silurian (Potsdam, Calciferous, and Levis shales); and there are trappean rocks. Faults and dislocations are noticed, and the occurrences of fossils. L. Carboniferous rocks are found in one part. General Structure, East Side of Port-à-Port Bay, 56–59. List of chief intrusions of trap, 60. Faults, 61. Carboniferous Formation, 62-68. Economics (Copper, Lead, Iron-ores, Petroleum, Peat, Gypsum, &c.), 69–74. W. W.

Nicholson, Prof. H. A. On the Guelph Limestones of North America and their Organic Remains. *Geol. Mag.* n. ser. dec. 2, vol. ii. pp. 343–348. (*R. Phys. Soc. Edin.*)

Describes this group of beds, which forms the uppermost member of the Niagara formation. It is probably not continuous, occurring in separate lenticular masses over wide areas. The fossils are numerous, and many of them peculiar—the predominance of *Trimerellidæ* and *Pentameri*, the great abundance of *Gasteropoda*, and the prevalence of the genus *Megalomus* being their most characteristic features. The Guelph formation of Canada = "Cedarville Limestones," or "*Pentamerus* Limestone" of Ohio. G. A. L.

Nicholson, Prof. H. A., and **W. H. Ellis.** On a Remarkable Fragment of Silicified Wood from the Rocky Mountains. *Can. Journ.* n. ser. vol. xiv. pp. 148–153, and *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 88, 89.

Describe a curious fragment of silicified wood from the well-known "silicified forest" near Pike's Peak in Colorado. After pointing out that the specimen can be shown by sections to be Coniferous, and probably referable to *Sequoia*, the authors describe its general form, in which it closely resembles a chip formed by human agency. A chemical analysis is appended. H. A. N.

Niles, W. H. The Physical Features of the State of Massachusetts (with discussion by **Dr. T. S. Hunt**). *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 507-510.

Orton, Prof. James. On the Geological Structure of the Amazons Valley. *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 359-368, with woodcut. [Being Chapter xli. of the forthcoming new edition of his work on the Andes and the Amazons.]

The Valley of the Amazons is a shallow, oval basin, gently inclined from W. to E., a large part of which is flooded yearly. This basin is enclosed by the slopes of the Andes and the metamorphic regions of Casiquiare and Central Brazil. Probably the Coast Cordillera was the first part of the Andes to be elevated, the E. range not reaching its present elevation until after the Cretaceous Epoch. The characteristic rocks of the maritime range are trachytes and porphyries; those of the E. range, sandstones and slate. Raised Beaches exist upon the coast; but there are evidences of subsidence in recent times. Passing from Pacasmáyo, Jurassic (?) limestone with trachytic porphyry and granite dykes is met with upon the W. flanks of the coast range. Upon the E. slopes Cretaceous beds are found. Further E. Liassic limestones occur; and the Cretaceous rocks are again found in the range of the Andes, at the head of the Amazons Valley. In crossing the Andes, in the latitude of Lake Titicaca, the following formations are found:—W. of the Coast Cordilleras Oolite beds largely covered with intrusive rocks; E. of this range conglomerate, sandstone, slate, and Jurassic limestone; then Triassic and Carboniferous rocks; and, lastly, the mass of the high Andes is formed of Devonian and Silurian rocks. The valley of the Amazons is uniform in character. The fundamental rock is metamorphic. Tertiary beds cover the watershed between the Amazons and Paraguay; Silurian rocks are rarely visible; Devonian rocks occur N. of the Serra of Ereré; Carboniferous fossils are found in places; Mesozoic beds are said not to occur E. of the Andes. The valley has received a deposit of clays, sands, and sandstones (Amazonian Tertiary); the sandstone is now confined to the Lower Amazons. A number of freshwater and estuarine shells have been collected from this formation, all the species and 12 of the genera being extinct. The author believes that these beds have been deposited in a vast inland lake. E. T. N.

Petermann, Dr. A. Die topographische und geologische Karte von Chile. [The Topographical and Geological Maps of Chile.] *Petermann's Mittheilungen*, Bd. xxi. pp. 41, 42; map in two plates (3, 4).

Short account of Chilian chartography. The map (scale 1 : 1,500,000) is topographical and orographical, showing altitudes by means of shades of colour. The mining localities are distinguished by signs. G. A. L.

Petitot, P. E. Rapport succinct sur la Géologie des vallées de l'Athabaskaw-Mackenzie et de l'Anderson. [Geology of the Athabaskaw-Mackenzie and Anderson Valleys.] Pp. 80. *Paris.*

Pinart, Alph. L. Voyages à la Côte Nord-Ouest de l'Amérique exécutés durant les années 1870–72. Vol. i. part 1. Histoire naturelle. [Travels in Alaska. Natural History.] Pp. 51, 5 plates. 4to. *Paris.*

Mineralogy and Geology, by **Jannettaz** and **De Cessac**, pp. 13–17. Microscopical Examination and Chemical Analysis of some rocks from Alaska, by **J. Léon de Cessac**, pp. 19–27. Palæontology, by **A. Gaudry** and **P. Fischer**, pp. 29–31. On some fossils from Alaska, by **P. Fischer**, pp. 33–36. W. W.

Powell [Major], J. W. Exploration of the Colorado River of the West and its Tributaries. Report to the Secretary of the Smithsonian Institution. Pp. 292. 80 illustrations, map, sections. 4to. *Washington.* [From Notice in *Geol. Mag.* dec. 2, vol. iii. pp. 365–370.]

Describes the cañons and their formation: some of them are 600 to 1500 feet deep, and but 20 to 30 wide; and some are more than a mile deep. Also the long lines of precipitous escarpments and the ranges of old volcanoes. The country has a basement of granitic or metamorphic rocks, with dykes of greenstone and granite. These are succeeded unconformably by 10,000 feet of sandstone, again unconformably overlain by Carboniferous, Triassic ?, Jurassic, Cretaceous, and Tertiary beds. W. W.

——. The Colorado Basin and its Cañons. *Scribner's Monthly*, January.

Prime, Fred., Jun. On the Occurrence of the Brown Hematite Deposits of the Great Valley. *Amer. Journ.* ser. 3, vol. ix. pp. 433–440. *Amer. Inst. Min. Eng.*

Gives Analyses of Damourite-slate from 4 places in Lehigh County. These slates are intimately connected with the best ore-deposits in the district; they are of Calciferous age, and *not* Laurentian or Huronian. The slate lies always below the ore; and to its impermeability the author attributes to a great extent the richness of the ore. The brown hæmatites were formed probably by the oxidation of iron-pyrites. A trace of sulphur is always to be found in them. G. A. L.

Raymond, R. W. Remarks on the Occurrence of Anthracite in New Mexico. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 140–143 (with discussion).

The specimen was from the lignitic formation of Galisteo, 15 miles S. of Santa Fé, which has been classed both as Tertiary and Cretaceous. The anthracitic character has been given by porphyritic dykes. "It is probable that the eruptive rocks have overflowed, as well as broken through, the coal-bearing sandstones, and hence that a large part of the many thousand acres probably underlain by the coal in this locality would be found more or less affected." Analyses have been made with varying results. W. W.

Reiss, W. Bericht über eine Reise nach dem Quilotoa und dem Cerro hermosa in den ecuadorischen Cordilleren. [Geology of Ecuador.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 274-294.

A Report on Quilotoa (W. Cordilleras), on the Cordilleras of Zumbagua and Angamarca, and on the Cerro hermosa. Describes a visit to Cuença, and refers to recent earthquakes in the district visited. F. W. R.

Rogers, Prof. William B. Geological Notes. *Proc. Boston Nat. Hist. Soc.* vol. xviii. pp. 97-106.

I. On the Newport Conglomerate. Finds no evidence of the superinduced structure supposed by Prof. Hitchcock to have caused the elongated form of the pebbles. II. On the Gravel and Cobble-stone Deposits of Virginia and the Middle States. The transporting agency was chiefly or wholly in the lines of the river-valleys; and the level of the water, or ice, concerned was much higher than the present water-level. W. W.

Rothwell, Richard P. Alabama Coal and Iron. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 144-158, sections on plate. With discussion. See also *Coll. Guard.* vol. xxx. pp. 131, 132, 386.

At the base of the Coal Measures is a series of hard, coarse, "heavy-bedded" sandstones, forming a well-marked ridge along the W. edge of the Cahaba Coal-field, which is bounded on the S. and E. by a fault, with a displacement of nearly 10,000 feet, bringing Silurian rocks to the surface: these latter are chiefly limestones and cherts. The Alabama Coal Measures consist of sandstones, conglomerates, and shales, with 10 or 12 seams of workable thickness (2 feet and upwards), besides many smaller beds. The workable seams are in 2 groups—the lower with an aggregate thickness of 30 to 35 feet, the upper and more local with 12 feet; but there is so great a thickness of measures between the two groups that where the upper occurs the lower cannot be worked. Analyses of 7 of the Cahaba coals are given. There are great deposits of limonite, yielding from 50 to 60 per cent. of iron, of irregular and uncertain extent; and "red-ores" occur in beds from 10 to 30 feet thick. W. W.

Sauvage, E. De l'exploitation et de la préparation de l'anthracite en Pennsylvanie. [Working and Preparation of Anthracite in Pennsylvania.] *Ann. Mines*, sér. 7, t. vii. pp. 222-260, 3 plates.

The first 4 pages give a description of the geological relations of the Pennsylvanian anthracitic basins.

Selwyn, A. R. Age of the Lignitic Coal Formation of Vancouver Island. *Amer. Journ.* ser. 3, vol. ix. p. 318.

Dissents from the views of Prof. Lesquereux, who stated that the coal of Nanaimo belongs to the lower American Eocene. This coal is overlain by nearly 4000 feet of marine Cretaceous beds. G. A. L.

Shaler, Prof. N. S. Antiquity of the Caverns and Cavern-life of the Ohio Valley. *Memoirs Kentucky Geological Survey*. vol. i. part 1, p. 9, 1 plate, and *Mem. Boston N. H. Soc.* vol. ii.

Caverns are very numerous throughout the Carboniferous Limestone, which is sometimes 300 feet thick: nearly all the small streams find their way into these: there are several tiers of them, and they are found only in the massive limestone. An approximation to their age is obtained by comparing the thickness of limestone cut through with the rate of stream-denudation. One million years, taking us back into the Pliocene, is thought to be their limit: the development of the cave-fauna dates from that time: it was not interfered with by glacial cold, as glaciation does not quite reach the district of Mammoth-cave. “The dozen cavern forms, which are related to outer species, have been derived from these since the present assemblage of life in that district was constituted.” E. B. T.

——. Note on the Geological Relations of Boston and Narragansett Bays. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 488–490.

Thinks that there is a set of faults N.E. and S.W., the whole forming a synclinal. The form of the Boston fjord shows glacial wear.

Simonin, L. À travers les États Unis, de l'Atlantique au Pacifique. [Across the United States.] Pp. 418. 18mo. *Paris.*

Contains a popular account of the Nevada silver-mining district.

——. Les grands lacs de l'Amérique du Nord. [Great Lakes of N. America.] *Revue de Deux Mondes*, June.

Treats the subject to some extent geologically.

Smith, Dr. Eugene A. Geological Survey of Alabama. Report of Progress for 1874. Pp. 139, 7 woodcuts (sections). 8vo. *Montgomery.*

Historical sketch of the Survey, pp. 9–13. Archæan Formations (Laurentian, Huronian, White Mountain series), 14–25. Details of the Counties, with analyses of iron-ores, slate, marbles, hornblendic rocks, magnesian limestones, cupriferous pyrites, and *Dudleyite*, a new mineral described by Dr. Genth (consisting chiefly of silica, alumina, magnesia, and oxides of iron), probably the result of the alteration of margarite, 26–116. Economic materials, 117–124. Chemical Report, with analyses of iron-ores, coals, limestones, &c., 125–132. W. W.

Smock, Prof. J. C. The Magnetic Iron Ores of New Jersey. Their Geographical Distribution and Geological Occurrence. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 314–326.

These ores are in the Highland Mountain range, in the northern part of the State, a high tableland furrowed by narrow valleys. This tract consists chiefly of crystalline rocks, covered in places by Drift and alluvial beds, and resembling the Laurentian of Canada. It is in these crystalline metamorphic rocks that the iron-ores occur, in *lines*, *ranges*, or *belts*. Between rock free from magnetite and the richest ore there is a perfect passage. The granitic rocks that contain magnetite generally cut the beds of gneiss, and are huge ore-bearing dykes. Being contemporaneous with the gneissoid rocks, the ore-beds have been subject to the disturbing forces that have affected them. W. W.

Stevenson, Prof. John J. Report on the Geology of a Portion of Colorado examined in 1873. *Rep. Geol. Surv. W. of* 100*th Meridian*, part iv. vol. iii. Geology, pp. 20, 307–508, 10 woodcuts.

Chaps. XI. Metamorphic Rocks, pp. 343–355. XII. Palæozoic Rocks: Silurian and Carboniferous, 356–377. XIII. Mesozoic Rocks: Triassic, Jurassic, Cretaceous, Age of the Colorado Lignites, 378–410. XIV. Eruptive Rocks, 411–425. XV. Surface Geology: Glacial Action, Ancient Lakes, Erosion by Running Water and Atmospheric Agencies, 426–477. XVI. Mineral Springs, with analyses, 478–487. XVII. Structure and Age of the Rocky Mountain System, 488–501. It is the result of 4 marked upheavals, at the close of the Carboniferous, of the Trias, and of the Cretaceous, and during the Tertiary. W. W.

——. Notes on the Geology of West Virginia. No. II. *Proc. Amer. Phil. Soc.* Feb.

——. The Geological Relations of the Lignitic Groups. *Proc. Amer. Phil. Soc.* June.

Thinks these beds are Cretaceous.

Strobel, P. Beiträge zur Kenntniss der geognostischen Beschaffenheit der Anden, vom 33° bis 35° südlicher Breite. [Geology of the Andes.] *N. Jahrb.* Heft i. pp. 56–62.

Geological notes of a journey in parts of the Andes, supplementary to Prof. Stelzner's observations. Published in full in the author's 'Viaggi nell' Argentinia meridionale,' 1869, and abstracted in Petermann's 'Mittheilungen,' 1870. F. W. R.

Verril, Prof. A. E. Brief Contributions to Zoology from the Museum of Yale College. No. XXXVI. On the Post-pliocene Fossils of Sankoty Head, Nantucket Island; with a note on the Geology, by **S. H. Scudder.** *Amer. Journ.* ser. 3, vol. x. pp. 364–375.

Mr. Scudder states that the fossiliferous beds of Sankoty, described by Desor as lying unconformably upon Miocene clay, are really conformable, the clays belonging to the same series. Full lists of the species found are given; those of the lower shell-bed are like those now living in the protected bays of S. New England at from 3 to 5 fathoms; whilst the upper shell-bed yielded an abundance of northern forms, showing that it was deposited by the cold waters of the outer coast, in shallow water, about 2 to 8 fathoms G. A. L.

Webster, Prof. N. B. On the Physical and Geological Characteristics of the great Dismal Swamp, and the Eastern Counties of Virginia. *Amer. Nat.* vol. ix. pp. 260–262.

Wheeler, George M. Annual Report upon the Geographical Explorations and Surveys west of the One Hundredth Meridian, in California, Nevada, Nebraska, Utah, Arizona, Colorado, New Mexico, Wyoming, and Montana. 8vo. *Washington.*

Report. Geology and Palæontology, Mineralogy, pp. 30–32.—*Appendices.* Report on the Geology of that part of North-western New Mexico examined during the Field-season of 1874, by **E. D. Cope**, pp. 61–97, pls. ii.–vi., 18 woodcuts. Chaps. I. The Eastern Slope of the Rocky Mountains. II. The Valley of the Rio Grande to Santa Fé. III. The Vertebrate Palæontology of the Santa Fé Marls, see *post.* IV. The Valley of the Rio Grande, from Santa Fé to the Zandia Mountains. V. The Sierra Madre and its Western Slope, with descriptions of *Unio Cristonensis*, Meek, and *Typothorax coccinarum*, Cope (reptile). VI. The Eocene Plateau.—Geological and Mineralogical Report on portions of Colorado and New Mexico, by **Dr. O. Loew**, pp. 97–116, 4 woodcuts. The valley of the Arkansas river at Pueblo, Colorado. The Sierra Mojada and Sangre de Christo Mountains. The San Juan Mountains, with analysis of basalt. The Mountain Region of Abiquin, with analysis of zeolite. The Nacamiento Desert, with analyses of sandstone, garnet, and chrysolite. From Mount Taylor to the Placer Mountains, with analysis of turquoise. The Mountains between Santa Fé and Las Vegas, with analyses of limestone and felspar.—Report upon the Agricultural Resources, &c., with analyses of soils, &c., by **Dr. O. Loew**, pp. 129–139. W. W.

Wheeler, George M., and D. W. Lockwood. Preliminary Report upon a Reconnaissance through Southern and South-eastern Nevada, made in 1869. Pp. 72. 4to. *Washington.*

Accounts of mines are given.

Winchell, Prof. Alex. Rectification of the Geological Map of Michigan, embracing observations on the Drift of the State. *Salem.*

Winchell, Prof. N. H. The Geological and Natural History Survey of Minnesota: the Third Annual Report. For the Year 1874. Pp. 36; 2 plates (geological maps). 8vo. *St. Paul.*

Describes the geology of Mower and Freeborn Counties. The latter is entirely drift-covered. Some Lower Cretaceous rocks are seen in the west of Mower County; no lignite of economic value had been discovered. G. A. L.

——. Note on Lignite in the Cretaceous of Minnesota. *Amer. Journ.* ser. 3, vol. x. p. 307.

Notes recent discoveries of probably valuable seams of lignite.

Wolf, Prof. Theodor. Geognostische Mittheilungen aus Ecuador. [Geological Notes from Equador.] *N. Jahrb.* Heft ii. pp. 152–170, Heft v. pp. 449–472, Heft vi. pp. 561–584.

Record of the volcanic eruptions and earthquakes which are reported to have occurred in Ecuador since the Spanish conquest. Critical examination of the accounts of the old chroniclers. F. W. R.

Worthen, A. H. Geological Survey of Illinois, vol. vi. part i. Geology, pp. 1–244.

Completes the publications of the Geological Survey of the State, the remainder of the volume being devoted to Palæontology. The first 9 chapters are by Mr. Worthen—the first treating of the Coal Measures of Illinois in general, and the others being concerned with the special geological features of 16 counties. The geology of 10 additional counties is discussed in the remaining 10 chapters of this section of the work by **Messrs. Broadhead, Cox,** and **Freeman.** The formations described are principally the Coal Measures and the Drift, many detailed sections of the former being tabulated. H. A. N.

5. *ASIA.*

Ball, V. The Ráigarh and Hingir Coal-field. (*Second notice.*) *Rec. Geol. Surv. Ind.* vol. viii. pp. 102–121, with map.

The rocks in and about the coal-field are systematically described. The chief groups are the Talchír series, the Barákar group of the Damúda series, and the Hingir sandstones. The Barákar group is described in a number of detached areas; sections are given showing it to contain coal-seams from a few inches to 6 feet thick. In the Hingir group Equisetaceæ and Filices have been found. The author considers that there is a fair prospect of the coal-field proving of value; but the truth can only be ascertained by borings. Assays of some of the coals are given. There is a note of some ironstone, which is worked by the natives. F. D.

Barbot de Marny, N. [Geology of Central Asia.] *N. Jahrb.* Heft viii. pp. 858–861.

Describes a recent journey. The peninsula of Mangychlak is a plateau of Sarmatian beds, resting on older rocks, chiefly Cretaceous. The upper part of the plateau, between the Caspian and Aral seas, consists of Sarmatian beds; the base consists of Oligocene and Cretaceous rocks. Describes the new Russian possessions N. of the Amou-Darya. The celebrated greenish black stone on Tamerlane's tomb, at Samarkand, is nephrite, or oriental jade. F. W. R.

——. Geologische Untersuchungen in Amu-Delta. [Geological researches in the Amu Delta.] *Röttger's Russische Revue,* Heft iii. pp. 307, 308.

Blanford, H. F. On the Age and Correlations of the Plant-bearing Series of India, and the former Existence of an Indo-oceanic Continent. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 519–542, pl. xxv. (map).

The Peninsula of India, or that part of the country S. of the Indo-Gangetic plain, contains no marine fossiliferous Palæozoic formations, and scarcely any Mesozoic. It consists chiefly of old crystalline rock, volcanic rocks, and of a great series of plant-bearing sedimentary formations, which are either otherwise unfossiliferous or yield evidence of freshwater conditions. The series has been divided into 8 groups; the greatest thickness in one district (the Sátpúra basin of Central India) is 15,000 feet; the greatest thickness of all deposits, comparing one district with another, is 21,300 feet. These groups are not all conformable; and the upper divisions, in different districts, cannot always be correlated. The upper groups are doubtfully referred to about the age of the Wealden; the lower groups to the Permian. At the base of the Talchír group, the lowest of the series, there is abundant evidence of glacial action. At the base of the Karoo formation in S.

Africa is a bed, described as "Claystone Porphyry" and "Trap Breccia," but which the author believes to be glacial; he suggests that the lower part at least of the Karoo formation may be Permian. The plant-bearing beds of New South Wales and Queensland he refers to the same age; but no evidence of glacial action has been observed here. The author believes that the Permian glaciation of Central India, S. Africa, and W. Europe were contemporaneous. This leads up to a discussion of the later Tertiary glaciation of India, its exact age and causes. Local changes in physical geography will not explain it; nor will Mr. Croll's theory account for contemporaneous glaciation in Europe and at the Equator. The true cause is yet to be found. Evidence is given to show that India, S. Africa, and Australia were connected in Permian times, the connexion of India and S. Africa lasting till the end of the Miocene period. The existing fauna gives abundant evidence of this; and the line of the old continent can be traced by islands and shallow seas between the areas now separated. W. T.

Blanford, H. F. The Rudiments of Physical Geography for the use of Indian Schools. Ed. 4. Pp. 169. 8vo. *London.*

The subject is treated from a geological point of view, with especial reference to the geological structure of India.

Blanford, W. T. On Flint-cores and Flakes from Sakhar and Rohri, on the Indus. *Proc. As. Soc. Bengal,* pp. 134–136.

Shows that the cores of flint that have been found were derived from the Nummulitic limestone. The better-worked flints (found in the Indus) were made by tribes who had established themselves on its banks, while the people of the neighbouring hills were less expert, or perhaps may have lived at an earlier time. F. D.

——. Report on Water-bearing Strata of the Surat district. *Rec. Geol. Surv. Ind.* vol. viii. pp. 49–55.

In the extreme east of the district there is basalt; on this rest Tertiary limestones and sandstones (the lowest abounding in nummulites); but the greater part is covered with alluvial sands and clays, the material of which was brought down by the Tapti, Narbudda, and other rivers. There is evidence of recent rise of land. The wells in the district give, some fresh, and some brackish, water; the author thinks that originally all the alluvial strata had more or less of salt, and that this has been washed out of those which have been lifted highest, and which are most porous. From this it is inferred that a deep boring is not likely to give better water. F. D.

David, l'Abbé A. Journal de mon troisième voyage d'exploration dans l'empire chinois. [Journal of my third exploring journey in the Chinese Empire.] *Paris & London.*

Gives geographical and some geological information, and notices of mines.

Drew, F. The Jummoo and Kashmir Territories; a Geographical account Pp. 568; maps and sections. 8vo. *London.*

Combined with the geographical description of the country between the Punjâb and Turkistân, there are scattered, according to their locality, notes on the following geological subjects:—Connexion of the form of the ground with its structure: Marks of old glaciers on ranges where none now exist, as on the Panjâl mountains: Former extension of the present glaciers, including proof of the existence of one in Nubrâ (Ladâkh), which had a thickness of 4000 feet: Avalanches in recent times, accounting for some stone-heaps observed: Glacier-lakes and floods caused by them: Great lake and flood on the Indus caused by a landslip: The origin of the Deosai plateau, at a height of 12,000 feet. River and lake deposits in Baltistân 3000 feet above the present river: The former extension of the salt-lakes of Ladâkh, and their origin by damming by alluvial fans: Salt and Soda deposits: Lacustrine beds on the Lingzhithang plateau, 17,000 feet above the sea—the lake that produced them having been formed by alluvial fans and old glaciers as dams. F. D.

Duncan, P. M. An Abstract of the Geology of India. Pp. 61. Fol. *London.*

A condensed sketch of the Geology of India, from the works of the Indian Geological Survey, and of various writers. Separating India into two Geological Provinces, (1) the Peninsula, (2) the Alluvial Plain, the Himalayas, the Salt Range, and the hills W. of the Indus, the writer describes each formation as exhibited in these two Provinces; correlating all, as far as possible, with the European rocks. F. D.

Fedden, F. On the evidences of "Ground-ice" in Tropical India during the Talchír period. *Rec. Geol. Surv. Ind.* vol. viii. pp. 16–18.

A detailed note of the occurrence, before observed, of ice-markings in the Talchír boulder-clay, which is presumably Palæozoic. At Irai, 10 miles W.S.W. of Chanda, in lat. 19° 53′, 900 feet above the sea, the boulder-bed contains masses of limestone, quartzite, and granite, the larger ones about 2 feet across; some are worn smooth, some are striated in fine parallel lines. This rests on a surface of limestone-rock, which (as exposed for a length of 330 yards) is polished, scratched, and grooved; the striæ are in long parallel lines running N.E. and N.N.E. The author concludes that the evidence for the glacial origin of these deposits is as conclusive as that for the ice-age formations of Europe. F. D.

Feistmantel, O. [Notes on Indian Geology.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 945–949.

Gives an account of Dr. Stoliczka's specimens, collected in the expedition to Yarkand. The most interesting are certain rounded objects resembling Römer's *Astylospongia*, from the Korakoram chain, a large brachiopod, probably *Pentamerus Knightii*, from the Koktan range, many other Silurian fossils, a number of Carboniferous Limestone species, some beautiful Triassic fossils, and a few Jurassic forms. Refers to the author's studies of the flora of the Jurassic rocks of Cutch, which is like that of the Yorkshire Oolites. Regards the Rajmahal series as Liassic, and the lower beds (Panchet rocks, Kampti series, &c.) as Triassic. F. W. R.

Fox, Alfred Lloyd. On some Fossils from Mount Lebanon. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part i. pp. 46–48.

Records the finding of remains of *Isocardia*, *Buccinum*, *Ostrea*, *Conus*, *Hippurites*, and *Nummulites*, as well as some lacustrine fossils, near Mount Lebanon. C. L. N. F.

Fryar, Mark. Report on Minerals in Shwe-Gyeen, Toungoo, and Palipoon districts, Tenasserim Division. *Coll. Guard.* vol. xxx. p. 390.

Abstract of Report, dated 20 May, 1875.

Godwin-Austen, Major H. H. The evidence of past Glacial action in the Nágá Hills, Assam. *Journ. As. Soc. Bengal,* vol. xliv. pp. 209–213.

In latitude 25° 30′ N., where the Burrail range rises nearly to 10,000 feet, old moraines are visible, which prove glaciers to have descended to the level of 5000 feet. The alluvial deposits of the valleys in the same neighbourhood are composed of conglomerates and clays, which the author considers to be of the same age as the moraines. F. D.

——. Notes on the Geology of part of the Dafla Hills, Assam. *Journ. As. Soc. Bengal*, vol. xliv. part ii. pp. 35–41, with section.

The outer range consists of thick-bedded sandstones with pieces of lignite; it shows a steep scarp towards the Plains, and a slope of 20°–25° towards the mountains. On the Dikrang river, further among the mountains, dark sandstones, with a bed of splintery coal 5 or 6 feet thick, are seen; these the author concludes belong to the Damúda series; about 1000 feet of these strata are visible. Beyond are metamorphic rocks. Concludes with a notice of some river-terraces of recent age. F. D.

Hodges, Prof. J. F. On the Composition of Tea and Tea Soils from Cachar. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 60–63.

Analyses of soil and subsoil are given.

King, W. Preliminary note on the Gold-fields of South-west Wynád. *Rec. Geol. Surv. India,* vol. viii. pp. 29–45.

Gold has been obtained from the surface-soil on the hill-sides, the stream-sands and gravels, and the alluvial flats. It is also to be found in quartz-veins, and to a slight extent in the rocks traversed by them. The whole of Wynád appears to be traversed by quartz-reefs, many of which have been proved to be auriferous. The gold from the reefs is paler than that from the washings; three analyses of the former gave an average of 79 per cent. of gold; and three of the latter showed 91·3 per cent., the rest being silver. The reefs average 4 to 9 feet in thickness; some can be traced for miles; their strike is N.N.W. and S.S.E., the dip eastward; this strike is *across* the stratification. The rock is

gneiss, of the oldest known series in India. Many details of several of the reefs are given, as well as an estimate of the prospects of mining.
F. D.

Mallet, F. R. On the Geology and Mineral Resources of the Dárjíling District and the Western Duárs. *Mem. Geol. Surv. Ind.* vol. xi. 96 pp., 2 maps.

The area described is a portion of the Himalayas (between the Terai and Sikkim) bounded by Nepal on the W. and Bhotan on the E. The outermost hills are of the soft sandstone and clunch of the Náhun beds (Tertiary). Going northwards, these appear to dip under, but probably dip *against*, the older rocks; these latter are, first, Damúda beds somewhat altered—alternations of sandstone and quartzite, shales, slates, and beds of anthracitic coal. Overlying these, without apparent unconformity, are some thousand feet of slates, which pass, as one ascends the hills, through mica-schist into gneiss; the more metamorphosed strata, here as in some other places, overlying those less altered. These slates, schists, &c. are named the *Dáling series.* A mass of variegated slates, differing considerably from these, and containing, besides thick bands of quartzite, a bed of dolomite 1500 to 2000 feet thick, is named the *Baxa series*; it underlies the Dáling. A detailed vertical section of several hundred feet of the Damúdas shows them to be composed of sandstone and shale alternating in thinnish beds, with several seams of coal, generally under a foot, but in one instance 5½ feet thick. The finest coal-seam yet found is 11 feet thick. The author inquires into the feasibility of correlating these with the Damúdas of the Rániganj field, and is inclined to put them with the "Rániganj" rather than the "Barákar" group. He discusses the probability of finding a coal-field of the Damúda series beneath the Gangetic alluvium, and concludes that though its existence is not improbable, it would not be wise to bore for it in the present state of the manufacturing industries of India. Of the Baxa beds a section is given showing between 5000 and 6000 feet, with the base not seen; the relation of these to the Damúda is obscure; but the Baxa beds are seen to underlie the Dáling beds without sensible unconformity. Also where the Dáling beds rest on the Damúdas there is no sensible unconformity, but a very marked and sudden lithological change. The Dáling beds change *upwards* into gneiss, which is here called "Dárjíling" gneiss.

Some details of the Tertiary beds are also given. Under the heading "Economic Geology," analyses of the coal are given, which show it to contain 70 p. c. or less of free carbon, 9 to 12 p. c. of volatile matter, and from 13 to 25 p. c. of ash; it is described as an "anthracitic coal," not anthracite: the question whether it could be worked with advantage is gone into; the author points out various drawbacks, especially the crushed and contorted state of the beds, but thinks that the seams are worth a fair trial. A bed of brown iron-ore, containing 30 p. c. of iron, has been found, as well as some magnetite and specular iron. The last two may ultimately become valuable for working on a larger scale. Copper is worked by the natives; it occurs as copper-pyrites, not in lodes, but disseminated through the slates and schists. F. D.

Mallet, F. R. Note on Coals recently found near Moflong, Khásia Hills. *Rec. Geol. Surv. Ind.* vol. viii. p. 86.

A seam 3 feet thick has been found, containing 37·8 p. c. of carbon and 31·6 p. c. of ash. It might be worth mining on a small scale.

Medlicott, H. B. Note on the Geology of Nepal. *Rec. Geol. Surv. Ind.* vol. viii. pp. 93–101; with map.

The outermost range of hills closely resembles the Sivaliks of the N.W. Himalayas, and the beds they are composed of are probably equivalents of the Sivalik formation, while further in the Nahun beds are found. Of the former, a thickness of 10,000 feet is exhibited; but this, the author observes, does not imply vertical sequence; of the latter, also, a great thickness is seen. North of these Tertiary rocks are schists, quartzite, and limestone, some of which may be the equivalents of the Krol group of the Simla district. On the N.N.E. side of the Nepal valley is gneiss. This valley has 125 square miles of either alluvial or lacustrine land. It is a rock-basin; but the author does not attribute its form to glacial action; it is not in the course of any main drainage line; its production is referred rather to local yielding after denudation. Some erratics are noticed at an elevation of only 1500 feet; the author is in doubt whether to put them down to glacial action. F. D.

——. Sketch of the Geology of Scindia's Territories. *Rec. Geol. Surv. Ind.* vol. viii. pp. 55–59.

The ground belongs to the Vindhyan plateau, which is cut into by the wide and deep valleys of rivers draining to the Jamná, and is bounded on the S. by the Vindhyan range. A considerable area is occupied by basaltic trap, connected with that of the Deccan plateau; in age it is between Nummulitic and Cretaceous. Beneath it is limestone and sandstone, called Lameta (? middle Cretaceous). Then occurs a great gap between these and the Vindhyan rocks, which are the next oldest in the region. This formation is divided into Bhanrér (sandstone, shale, and limestone), Riwa (sandstone and shale), Kaimúr (sandstone, conglomerate, and shale). The age of these is undetermined. Near Gwalior the Vindhyans rest unconformably on rocks to which the name "Gwalior series" has been given. The territories include also a small area of gneiss rock. F. D.

——. The Sháhpur Coal-field, with notice of Coal explorations in the Narbada region. *Rec. Geol. Surv. Ind.* vol. viii. pp. 65–86; with map.

Notices the recent borings for coal in the Narbada valley, and discusses the probabilities of success. This must depend in part upon the extension of the great Satpúra coal-basin, with respect to which question many local details are given: a note of some trap-dykes, quartz-veins, and faults is added. The author concludes that there is good prospect of coal in the Shápur area, where Coal Measures are known to occur, and that there is a reasonable hope of the Measures being found in the other places where search is being made. On the Lower Narbada the probabilities are less, but sufficient to justify a trial. F. D.

Milne, John. Geological Notes on the Sinaitic Peninsula and North-western Arabia. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 1–28; sections.

The general structure of the region traversed is noticed; and remarks are made on rock-specimens brought home, some of which have been examined microscopically. Evidence is given that the Gulfs of Suez and Akaba are rising; there are notes on the formation of the Wadis, and on the denuding and polishing action of sand. Mt. Baghir, or Jebel el Nûr, identified by Dr. Beke as the true Mt. Sinai, and believed by him to have been an active volcano during the historic period, is shown to be a granite hill, traversed by dykes of dolerite. (See GEOLOGICAL RECORD for 1874, p. 131.) W. T.

Mongel, L. Note sur le gisement de bitume fossile des environs de Zaho (Kurdistan). [The deposit of fossil bitumen in the neighbourhood of Zaho.] *Ann. Mines,* sér. 7, t. vii. pp. 85-91, 3 figs. in pl. iii.

The bitumen is in beds about 0·20 metre thick, alternating with very thin clay bands; they dip 40°, 10° S. of W. In 22 days 485 tons of bitumen was extracted by means of levels. The substance is valuable for steam and gas purposes. Its principal locality is Herboul. Near Erbille is a thick bed of bituminous limestone; and at numerous points between Kerkouk and the latter place petroleum has been noticed.
G. A. L.

Montgomerie, Lieut.-Col. T. G. Memorandum on the Results of an Exploration of the Namcho, or Tengri Núr Lake, in Great Tibet, made by a Native Explorer during 1871–2. *Journ. R. Geogr. Soc.* xlv. pp. 325–330; map (not geological).

Fossils found on the shore of the Yang Namcho Chedino, or Tengri Núr Lake, 15,190 feet above the sea-level, were considered by Prof. Oldham to be not older than Cretaceous, and probably Nummulitic, allied to Sindh and Panjáb Nummulitic fossils. R. E., Jun.

Ness, Walter. The Government Experiments in Iron-making in India. *Coll. Guard.* vol. xxx. p. 925.

Gives particulars as to the ore of Lohara and Pipulgaon, with analyses, and also as to neighbouring coal.

Nesterowsky, —. Description géologique de la partie Nord-Est de la chaîne de Salaïr, en Altaï, Gouvernement du Tomsk. [Geology of N.E. part of Salaïr chain, Altai.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 12–33, one plate (geological map and section).

The sedimentary rocks of the district belong to the Coal Measures, the Carboniferous Limestone series, Devonian, and metamorphic rocks.

The igneous rocks are diabase, diorite, porphyries, and basalt. Lists of fossils are given. The Coal Measures form part of the great Kousnetzk basin, and comprise a number of coal-seams, one of which, No. 2 at the Batschat State Colliery, reaches a thickness of 60 metres where undivided. Thicknesses and dips of all the known seams of the region are given, as well as an analysis of a black-band ironstone found in the shale with which the coal is associated. G. A. L.

Nördenskjöld, Prof. A. E. On the Jenisei. *Nature*, vol. xiii.

Jewremow Kamen, the last rocky promontory up the eastern bank, consists of a dolerite rock, 50 to 60 feet high, and is the last place where marine life was observed. To the S. the E. side of the river has steep sand-banks, 30 feet high, beyond which the tundra commences; this consists of sandy beds, containing no glacial erratics. In the northern tundra were a few pebbles of basalt, of sandstone with marine fossils, and of brown coal. C. E. De R.

Oldham, T. Annual Report of the Geological Survey of India for 1874. *Rec. Geol. Surv. Ind.* vol. viii. pp. 1–12.

A sketch of the progress of the Survey, illustrated by a map.

Petit-Bois, G. Aperçu géologique de la vallée du Kara-Sou (Asie-Mineure). [Geology of the Kara-Sou valley, Asia Minor.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, pp. 183-188.

The sedimentary rocks, supposed to be Cretaceous, are associated with igneous rocks; and fossils are very rare in them.

Pinart, Alph. L. La Caverne d'Aknanh, île d'Ounga (archipel Shumagin, Alaska). [The Cave of Aknank, Alaska.] 4to. *Paris.*

Richthofen, Baron von. La province de Sz'tshwan. *Rev. Sci.* p. 388.

Rousselet, Louis. L'Inde des Rajahs. *Paris.*

Gives an account of the diamond-mines of Pannah, with an illustration. The diamond-rock is worked at a depth of 180 ft.

Stoliczka, F. The Altum-Artush, from a Geological point of view. *Rec. Geol. Surv. Ind.* vol. viii. pp. 13-16.

The province of which Altum-Artush (in long. 76° 8′ E. and lat. 39° 41′ N.) is the capital has in its S. part alluvial gravels and sands. N. of this are low hills of beds of conglomerate (at top) and below of sandstones and clays. In some places these beds dip *towards* the older rocks; this phenomenon the author considers partly due to erosion of the softer beds, and a consequent subsidence of those above. The next series are Carboniferous rocks, breccia-limestone, limestone conglomerate, and dolomite-limestone. These smaller hills are a continuation of the Koktan range; they are overlain towards the Belanti Pass by green and purple sandstones and shales, which may be Trias. The paper ends with a description of some of the *jilgas*, which are plains, the sites of old watercourses. F. D.

Tietze, Dr. E. Reisebriefe aus Persien. [Letters of Travel from Persia.] *Mittheil. k.-k. geogr. Ges.* Bd. xviii. n. 2, pp. 79–81.

Contains geological notes.

——. Mittheilungen aus Persien. [Communications from Persia.] *Verh. k.-k. geol. Reichs.* pp. 25–30, 41–46, 129–133.

Near Asterabad Palæozoic fossils were found, indicating probably Carboniferous Limestone, while U. Silurian fossils were abundant in Suturuwar and Kelbchide valleys; with these are associated diorites containing specular iron. Sulphur occurs near Tasch, not volcanic, but in limestones and shales, older than Lias. The coal and plant-bearing beds of the Lias are seen in other parts of the Alburs chain, which consists chiefly of limestones, some older and some younger than Lias; below is older red sandstone; no crystalline axis to the chain, but azoic shales are seen near Astrabad. A thick deposit of salt was noticed near the Sirdara pass. The Lignite of Tæbris, 1½ ft. thick, occurs in light blue-grey marls, which contain gypsum layers and some salt (? Miocene). Lead occurs at Rej in limestone. E. B. T.

Trautschold, H. [The Urals.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 703–706.

Letter describing the writer's journey through the Urals, with special reference to the mines. A great deposit of manganite has been discovered near Tagil, and is worked for Bessemer steel manufacture. The platinum washings at Tagil are now the only ones worked in the Urals. The writer visited the Ilmen Mountains, the Perowskite Mines of Achmatowsk, the Copper Mines near Orenburg, and the Mountain Limestone, with asphalt, near Ssysran. Cavities of *Fusulina* shells and *Cyathophyllum* were found filled with resin; and the author argues in favour of the origin of naphtha by decomposition of marine animals. F. W. R.

Wilson, Major C. W. Palestine Exploration: the Ancient and Modern Water Supply of Jerusalem. *Science Lectures for the People*, ser. 6, pp. 253–267.

Wynne, A. B. Geological notes on the Khareean Hills (Punjab). *Rec. Geol. Surv. Ind.* vol. viii. pp. 46–49.

The beds are brown and purple clays alternating with grey and green sandstones. In the latter are thinly scattered teeth and fragments of large bones of *Equus*, *Bos*, *Cervus*, *Elephas*, and *Crocodilus*. These beds appear to belong to the Potwar Tertiary series. They are arranged in a distinct anticlinal, the axis of which coincides with the highest part of the range. At the top they graduate into more recent-looking beds — sandy and gravelly, with drab clays, the latter resembling the alluvium of the neighbouring plains. The lower beds may be 3000 ft. thick, the upper 200 to 400. F. D.

——. The Trans-Indus Salt Region in the Kohát District. *Mem. Geol. Surv. Ind.* vol. xi. pt. 2, pp. 220, with map.

The following is the series of rocks observed:—Upper, Middle, and

Lower Tertiary Sandstones (Nahun? and Dugshai beds); Subathu (Eocene), consisting of Nummulitic limestone at top and red clay below (containing bands of sandstone and limestone, with Nummulites); Gypsum; and Rock-salt. In one part the rock-salt is proved to be more than 1000 feet thick; in other parts 100 to 300 feet of salt beds, without any alternations of unworkable salt, are exposed, with the bottom not seen. It is not known what underlies the salt in this region. The author thinks that this salt is not the equivalent of that of the Salt Range on the other side of the Indus, the chief argument being the absence of the 7 thick formations which rest upon the latter. The gypsum, with some bands of clay associated with it, is 300 ft. thick; it occupies a larger area than the salt; sometimes beds of limestone are intercalated with it. The mode of formation of the gypsum and salt, and the question of the extension of the salt beyond the frontier, are discussed. Part 2 consists of a detailed description of the structure of the country, illustrated by many sections, which show great contortion and sometimes inversion of beds. Part 3 (by **H. Warth** and **A. B. Wynne**) treats of the economic aspects of the region; it gives an account of the native method of working, a description of the mines and outcrops, and an estimate of the quantity of salt existing. F. D.

6. *AFRICA.*

Anon. The Proposed Inland Sea in Algeria. *Journ. Soc. Arts,* vol. xxiii. no. 1186, pp. 827, 828.

Gives the results of the French Exploring Expedition. The depression that can be flooded is 6000 square kilom. in area. "None of the fine oases of the Souf would be immersed." The existence of the depression, which has been doubted, is thought to be placed beyond doubt. W. W.

Blanford, H. F. Indo-Oceanic Continent, see p. 134.

Bleicher, —. Note sur les gisements de Polypiers des terrains tertiaires moyen et supérieur des provinces d'Oran et d'Alger. [The Coral-deposits of the Middle and Upper Tertiary Basins of Oran and Algiers.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 284–287.

The Middle Tertiary is divisible into the following stages (in ascending order):—1. The *Cartennian,* with a special fauna of Echinids, corals, and particularly of Petro-Spongidæ. 2. The *Helvetian,* with banks of *Ostrea crassissima,* and a remarkable series of Echinids, Corals (generally new forms), and Foraminifera. 3. The *Sahelian,* abounding in fishes, Bryozoa, Corals, Echinids, &c. The coral localities in these divisions are enumerated. Only two localities for Pliocene Corals are known. G. A. L.

——. [Tangiers, El Araïch, Meknes.] *Rev. Géol.* t. xii. pp. 176, 177.

The divisions recognized are:—Quaternary, Pliocene, Miocene, Nummulitic, U. and M. Cretaceous, and Jurassic.

Brown, John Croumbie. Hydrology of South Africa; or details of the former hydrographic condition of the Cape of Good Hope, and of causes of its present aridity; with suggestions of appropriate Remedies for this aridity. Pp. vii, vi, 260. 8vo. *London.*

Describes the physical geography of S. Africa, and draws inferences respecting its former hydrographic condition; gives a sketch of the geology of S. Africa; discusses the cause of the present aridity; suggests means of overcoming this aridity, and of preventing the occurrence of torrential floods. F. W. R.

Calderon, Salvador. Reseña de las rocas de la isla volcánica Gran Canaria. *An. Soc. Españ. Hist. Nat.* vol. iv. part 3.

A geognostic description of the Gran-Canaria Island, with a catalogue of the different volcanic and sedimentary rocks therein found. Six woodcuts in the text show various effects of volcanic action. J. McP.

Cohen, Dr. E. Erläuternde Bemerkungen zu der Routenkarte einer Reise von Lydenburg nach den Goldfeldern und von Lydenburg nach der Delagoa-Bai im östlichen Süd-Afrika. *Jahresber. geogr. Ges. Hamburg.* Pp. 116, map.

——. Ueber einige eigenthümliche Melaphyr-Mandelsteine aus

Süd-Afrika. [South-African amygdaloidal Melaphyres.] *N. Jahrb.* Heft ii. pp. 113–127, with 2 plates.

Describes a rock from the Maluti Mountains, on the borders of Basuto Land. It is a melaphyre, consisting mainly of felspar and augite, with ramifying cylindrical cavities filled with heulandite. Also describes another melaphyre from Backhouse on the R. Vaal. A sketch-map on scale of 1 to 3,333,333, showing the Maluti Mountains, accompanies the paper. F. W. R.

Cooper, G. C. Diamonds in South Africa. *Sci. Goss.* no. 121, p. 20.

Controverts the theory of the origin of the diamond in "pipes" connected with old volcanoes, and concludes that the contents of the pipes are water- or ice-borne, and quietly deposited. W. W.

Duveyrier, H. Premier rapport sur la mission des Chotts du Sahara de Constantine. [First Report of the commission as to the Chotts of the Constantine Sahara.] *Bull. Soc. Géogr. Paris,* sér. 6, t. ix. p. 482.

On the possibility of making an inland sea in part of the Sahara.

Fox, Charles. Tooth and fragments of bones of Hippopotamus from the neighbourhood of Constantine in Algeria. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 26–30.

These remains were found a few feet beneath the surface of a plateau 800 or 900 feet above the river Roummel. The author also gives a little information about the geology of other parts of Algeria. C. L. N. F.

Jourdan, Prof. —. Paper on the Geology, &c. of Algeria. *Bull. Soc. Sci. Algér.* for 1875. Noticed in *Nature,* March 30, 1876.

Kinahan, G. H. The Inundation of the Sahara. *The Times,* Aug. 4, p. 3.

Note suggesting that the proposed new Saharan Sea might have the effect of causing the return of a Glacial period over great portions of Europe and Africa. G. A. L.

Largeau, V. Les puits artésiens dans l'Oued Rhir. [Artesian Wells.] *L'Explorateur Géogr. et Commerc.* no. 91, pp. 200, 201.

Lenz, Dr. O. Reisen in Afrika. *Verh. k.-k. geol. Reichs.* pp. 149–152.

In travelling from the Gaboon to Okanda by river, the first rocks seen were on striking the mountain ranges in the Okota country: their height is about 2000–2500 feet; they consist of crystalline schists, quartzites, &c. At Okanda there is true granite. E. B. T.

Markham, C. R. Lieut. Cameron's Examination of the Southern Half of Lake Tanganyika. *Journ. R. Geogr. Soc.* vol. xlv. pp. 184–228; map (not geological).

Lake Tanganyika is 2710 ft. above the sea-level, and is encroaching on the country forming its E. shore. In 1868 Livingstone found the S. extremity to consist of a red argillaceous schist. The Cape of M'pimbwe is composed of blocks of granite. Geological notes are scattered through Lieut. Cameron's diary attached to the paper. R. E., Jun.

Monteiro, J. J. Angola and the River Congo. With map and illustrations. 2 vols. pp. 305 and 340. 8vo. *London.* Vol. i. (Geological information dispersed).

Mineral pitch, malachite, granite pillar, salt, bitumen, iron-smelting, copper-deposits, &c. noticed.

Mullens, Rev. J. On the Central Provinces of Madagascar. *Journ. R. Geogr. Soc.* vol. xlv. pp. 128–152, and *Proc. R. Geog. Soc.* vol. xix. pp. 182–202.

In the higher part of Madagascar, and far into the lower plains, the chief rock mass is Gneiss or Granite. A deposit of red clay, with boulders, has filled various valleys and cuttings, and in places forms enormous hills. The central province, especially around the Ankárat Mountains, is of volcanic origin. The latter are the highest elevations in the islands, 8000 to 8950 ft. high, and from them radiate many lava streams; there are, however, no distinct craters. But to the E. of Lake Itasy 40 craters were discovered, and, according to tradition, of no very ancient date. 4 hot springs were also seen—one with a temperature of 130° F., and with jets of carbonic acid gas. In the district of Ankay a vast sedimentary deposit of the red clay occurs. R. E., Jun.

Peron, A. Echinides fossiles de l'Algérie . . . considérations sur leur position stratigraphique. See *post*, **Cotteau**, under PALÆONTOLOGY.

Pinchin, R. A Short Description of the Geology of part of the Eastern Province of the Colony of the Cape of Good Hope. (Abstract.) *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 106–108, pl. iv. (maps and sections).

The chief sections described are from Cape St. Francis, over the Winterhock and Langeberg ranges to Jansenville, and from Port Elizabeth to Somerset. A peculiar rock, which has been described as 'Claystone porphyry,' 'Trap,' 'Trap Ash,' 'Trap Breccia,' and 'Boulder Clay,' was believed by Rubidge to be a metamorphosed shale. W. T.

Raymond, W. R. Remarks on the Occurrence of South African Diamonds. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 143, 144.

The rock in which the diamonds occur is a sort of volcanic tufa, which was likened by Dr. Hunt to the *trass* of the Rhine.

Schimper, Dr. Geologische Verhältnisse des Districtes Arrho in Abyssinien. [Geology of Arrho, &c.] *Verh. k.-k. geol. Reichs.* pp. 231–233.

Describes mud-volcanos produced by the action of rain on pyrites. Salt and cinnabar are present.

Silver, S. W., & Co.'s Handbook for South Africa, including the Cape Colony, Natal, the Diamond Fields, and the Trans-Orange Republics. *London.* Pp. 495.

A Geological Chapter on the Diamond Fields is given.

Stache, Dr. Guido. Die projectirte Verbindung des Algerisch-tunesischen Chott-Gebietes mit dem Mittelmeere. [The proposed uniting of the Algerine-Tunisian 'Chott' district to the Mediterranean.] *Vienna.*

7. *AUSTRALASIA.*

Acton, R. Article "Australia or New Holland." *Encyclopædia Britannica.* Ed. 9. 4to. iii. pp. 103–115.
A few notes on the general Geology, pp. 107–109.

Anon. *Iron*, vol. v. The Mineral Resources of N. Zealand—Coal, p. 779. Mining in Australia, pp. 522 and 714.

——. More Australian Tin. *Iron*, vol. v. p. 551.
Records the discovery of a sample of stream-tin ore, weighing about 10 lb., intermingled with ½ oz. of rough reef-gold, at the foot of Mt. Pilot, N. S. Wales. The geological formation consists of superficial deposits on granite. R. E., Jun.

——. *Iron*, vol. vi.
On the Coal of Victoria (second notice of the Melbourne Exhibition), p. 645. States that the Coal [? Coal Measures] is about 400 sq. miles in extent, with seams 12, 17, 24, 32, and 48 feet thick.
Mining in Australasia, p. 646.
Tasmanian Tin, p. 711. Extract from a report by **Mr. Newman** on the Mt. Bischoff tin mines.

——. The Coal-fields of N. S. Wales. *Coll. Guard.* vol. xxix. p. 446.
Gives extracts from Reports of returns of the yield. A new section on the Australian Agricultural Company's property will probably add another proof of the correctness of the Rev. W. B. Clarke's views as to the marine fauna and flora of these Coal Measures. R. E., Jun.

——. *Queenslander*, vol. x. new series.
1. *The Discovery of Gold in Australia* (no. 2, p. 24).—Gold was first discovered in 1825, on the Fish River, 15 miles N.E. of Bathurst.
2. *Queensland Coals* (no. 3, p. 23).—The Coal from a 15-inch seam at Bingera has proved to be the most valuable in the colony.
3. *New Lode at the Moonta Mines* (no. 7, p. 24).—A 5-foot lode, at a depth of 100 fathoms; 3 feet of the lode is composed of solid yellow ore. The average value of the lode is 6 tons of 18 p. c. ore a fathom.
4. *Deep Sinking at Stawell, Victoria* (*ibid.*).—A solid quartz-lode has been cut in the Magdala shaft, at a depth of 1681 feet.
5. *Report on the Edwardstown Gold-field*, by **P. H. Selheim** (*ibid.*)—The slates from which the auriferous alluvium is derived are overlain by 300 feet of Desert Sandstone, and are only exposed in deep ravines; the amount of auriferous alluvium is limited.
6. *Queensland Gems—Opals* (no. 11, p. 24).—Opals are obtained at the Listowel Mine, Barcoo River, in veins from 8 in. to 16 in. in thickness, traversing a "porphyritic and sandstone rock." R. E., Jun.

Bonwick, J. Mineral Resources of Australia. Coal localities in N. S. Wales. *Iron*, vol. v. p. 226.

The Carboniferous area is 15,419 sq. miles. Describes the various Coal-fields of the colony. The Sydney Sandstone area (=Hawkesbury Rocks of Clarke) of 10,000 sq. miles without a doubt covers a coal-bed. Part of the comparatively unknown western interior of N. S. Wales may prove to be Carboniferous. R. E., Jun.

——. Mineral Resources of Australia. Notes on Australian Coal. *Iron*, vol. v. p. 387.

The Coal-field of N. S. Wales and Queensland appears to be the W. edge of a greater area now under the S. Pacific. The Wianamatta, or uppermost series of the N. S. Wales Carboniferous area, results from the denudation of the underlying Hawkesbury Series, which is succeeded by the true Coal Measures. All the Carboniferous rocks of N. S. Wales have suffered much by igneous intrusions. Refers to the disputed age of these beds. R. E., Jun.

Booth, B. S. Description of the Moa Swamp, at Hamilton. *Trans. N. Zealand Inst.* vol. vii. pp. 123–138; *Proceedings*, pp. 544–549.

The Moa remains were obtained from bluish sandy micaceous clay, 2 to 8 feet thick, resting on a bed of quartz-pebbles, forming a small lagoon 45 by 50 feet. The bones were confusedly intermingled, and many of them much decayed; about 3½ tons were removed. A number of bones of the extinct goose (*Cnemiornis*) and a few of the eagle (*Harpagornis*) were also obtained. There must have been about 400 individuals entombed in this bone-swamp. The theories advanced to account for this accumulation of Moa bones are criticised. The author supposes the lagoon to have been the site of a thermal spring, to which the Moas resorted for warmth during the commencement of a period of cold (which he supposes caused the extinction of this bird). R. E., Jun.

Clarke, Rev. W. B. Remarks on the Sedimentary Formations of New South Wales, &c. Ed. 3. 8vo. *Sydney*. Pp. 61; vertical sections.

a. General Remarks.—*b. Azoic and Metamorphic.* Metamorphism appears to be more noticeable in N. S. Wales than in the other colonies. —*c. L. and U. Silurian.* Considerably developed in Victoria and N. S. Wales; N. Australia and the N.W. Territory have not furnished any satisfactory evidence of rocks of this age; but in Queensland, S. Australia, and Tasmania they are developed to some slight extent.—*d. M. Palæozoic.* Of 81 species of fossils from the N. S. Wales Devonian, only 5 belong to the upper division, the remainder representing the lower. In Victoria the Buchan Limestone is also said to be Devonian. Tasmania and W. Australia have not furnished any decided proof of the existence of rocks of this age; but in Queensland Devonian rocks extend through 10 degrees of latitude. Both the Tin Mines of N. S. Wales and Queensland occur in this formation.—*e. U. Palæozoic.* Enters into the question of the age of the N. S. Wales Coal Measures, and the range of *Glossopteris Browniana* and other plants. Divides the Carboniferous Series thus:—1. U. Coal Measures; 2. U. Marine Beds; 3. L. Coal Measures; 4. L. Marine Beds, frequently resting on a conglomerate. Carboniferous beds are found in Queensland, Tasmania, and to some extent in W. Australia.—*f. Mesozoic.* The supra-Carboniferous beds comprising the Wianamatta and Hawkesbury Series ("Sydney Sandstone") contain patches of coal but no workable coal-seams; there is some doubt as to their exact age. Palæontological evidence has indicated the presence in W. Australia of the L. Oolites and U. and M. Lias, and in Queensland that of the L. Oolites and Cretaceous. No Oolitic marine fossils have been obtained in N. S. Wales; nor is there evidence of Mesozoic rocks in S. Australia; and the existence of the latter in Tasmania is an open question. In New Caledonia the Secondary formations are represented by Triassic, Liassic, and Neocomian rocks or fossils.—*g. Tertiary.* No Tertiary marine deposits are met with throughout the whole of N. S. Wales and Queensland, although in the former there are plant-deposits of that age. The deep auriferous "leads" of N. S. Wales yield, like those of Victoria, seeds and seed-vessels allied to those of the present forest-trees of E. Australia; they are probably later Pliocene. The Oligocene beds of Victoria have yielded nearly 40 sp., and the Miocene nearly 50 sp. of marine fossils. One of the auriferous drifts yielded remains of Marsupials, Mollusca, and the Dingo. Some drifts in N. S. Wales are considered identical with those termed Pliocene in Victoria. Tertiary marine fossils occur along the W. coast as far N. as North-west Cape.—*h. Quaternary and Recent.* Wide-spread accumulations of drift-pebbles occur in the interior, besides black trappean soil, with the bones of gigantic marsupials, reptiles, &c. The ossiferous accumulations in the Wellington and other bone-caves are of similar age. The sections show the position of *Glossopteris* in the Palæozoic marine deposits. R. E., Jun.

Crawford, J. C. Did the Great Cook Strait River flow to the north-west or to the south-east? *Trans. N. Zealand Inst.* vol. vii. pp. 448–451; *Proceedings*, p. 492.

The formation of Cook Strait, between the N. and S. Islands of New Zealand, is considered to be the result of fluviatile, followed by marine, denudation. A rise of 1100 feet would convert the Strait into dry land, whilst the sounds and inlets on the S. side would be similarly converted by a rise of 200 feet. The course of the river was eastward; and, from the extent of its tributaries, it must have been large: the trend of the fall of the bottom of Cook Strait is from westward to eastward. The author infers that the Cook Strait River existed during a period of elevation after the deposition of the Tertiaries. R. E., Jun.

——. Some further Proofs as to the ancient Cook Strait River and the Harbour of Wellington as a Freshwater Lake; also a Consideration of the Date at which the Islands were united. *Trans. N. Zealand Inst.* vol. vii. pp. 451–453.

Both the flora and fauna indicate that the two chief Islands of New Zealand were once united, which could only have taken place by a higher level of the land in Cook Strait. The required rise would convert Wellington Harbour into a lake. The presence in both islands of the wingless birds, the "Kiwi" and the "Weka," conclusively proves that they were united, and, "geologically speaking, at no distant date." R. E. Jun.

Dawkins, W. B. The Age of the New South Wales Coal Beds. *Trans. Manch. Geol. Soc.* vol. xiv. pt. 2, p. 28.

Thinks that the beds in question are true Carboniferous.

Dobson, A. D. On the Date of the Glacial Period; a comparison of Views represented in Papers published in the Transactions of the N. Z. Institute, vols. v. and vi. *Trans. N. Zealand Inst.* vol. vii. pp. 440–446.

Notices the views which have been advanced on this subject. No general elevation has taken place since the Glacial period; and if the extinction of the glaciers was due to subsidence, then the subsidence may be considered as the latest movement which has taken place. The auriferous drifts along the coasts, at levels from 50 to 400 feet above sea-level, owe their shape to combined marine and fluviatile action, but were deposited before the Glacial period, as they are sometimes covered with moraine matter. R. E., Jun.

Firth, J. C. Deep Sinking in the Lava Beds of Mount Eden. *Trans. N. Zealand Inst.* vol. vii. pp. 460–464; *Proceedings*, p. 522.

Records the volcanic strata passed through in sinking a well 212 feet deep at a height of 329 feet above the sea-level and 313 ft. below the summit of Mt. Eden. During the exploration, the results of 7 distinct eruptions were passed through, consisting of alternations of volcanic ash, scoria, and lava. In the first eruption was observed a soft sandstone rock, 18 in. thick, which the author, from the occurrence in it of leaves of toetoe (*Arundo conspicua*) or of raupo (*Typha latifolia*), considers to have been deposited in a freshwater lake which then occupied the crater of Mt. Eden. The sandstone is overlain by a mud rock, perforated by cylindrical holes, resembling the trunks and branches of trees. The first eruptions probably followed each other at very short intervals. R. E., Jun.

Forrest, J. Journey across the Western Interior of Australia, from Champion Bay and Murchison R. on the West, to Peak Station on the Telegraph Line. *Proc. R. Geogr. Soc.* vol. xix. pp. 57, 310, 481.

In the discussion, Mr. Daintree stated that the explorations of Messrs. Forrest and Warburton have proved his prognostications concerning the geological structure of the centre of Australia to be correct, viz. that the Desert Sandstone at one time covered nearly, if not quite, the whole of Australia, and that the Cretaceous series of W. and Central Queensland extends to W. Australia, but is hidden over large areas by Desert Sandstone. R. E., Jun.

——. Explorations in Australia. Pp. 354. 4 maps, plates, &c. 8vo. *London.*

1. *Explorations in Search of Dr. Leichhardt and Party.* Between

Lake Brown and Mt. Churchman, near Lake Moore, granite was discovered; and it occurs at intervals from Mt. Churchman, itself a granite hill, to the N. end of L. Moore, thence in a N.E. direction to L. Barlee, a large dry salt lake. Throughout the country forming the N. boundary of the supposed E. extension of this lake as far N. as Mt. Holmes, granite is the prevailing rock, and is again met with further W., on the W. side of Lake Monger. Great local attraction was experienced on some of the hills about L. Barlee. At the most E. point reached, lat. 28° 41′ S., and long. 122° 50′ E., sandstone prevailed (? Desert Sandstone), forming open spinifex desert. In the neighbourhood of Mt. Singleton trap rocks occur.—2. *Explorations from Perth to Adelaide, around the Great Australian Bight.* From the point at which the Expedition struck the S. coast at the Phillips River, as far as long. 124° E., between Israelite Bay and Point Culver, granite prevails extensively; but at this point onwards to the Head of the Great Australian Bight, 400 miles, the country at and near the coast consists of a Tertiary limestone, forming perpendicular cliffs 300 to 400 feet high.—3. *Exploration from Champion Bay across the Desert to the Telegraph, and to Adelaide.* The upper waters of the Murchison flow through a granite country. Mt. Hale, near the source of this river, is composed of micaceous iron-ore and brown magnetic hæmatite. The Kimberley Range, considered as the watershed of the Murchison, is composed of very magnetic brown hæmatite, in places yielding a bituminous pitchy substance, probably of organic origin. The banks of Kennedy Creek are composed of slate, supposed to be Silurian. The general character of the immense tract of country from this to the 129th meridian is a gently undulating spinifex desert, composed of a light red sandstone, cropping out and forming low cliffs (Tertiary Desert Sandstone). Granite again makes its appearance in the Mann Ranges. There is an Appendix by **R. B. Smyth**, "On the Geological Specimens collected on the Expedition." R. E., Jun.

Forrest, J. Journal of the Western Australian Exploring Expedition through the centre of Australia, from Champion Bay to the Overland Telegraph Line between Adelaide and Port Darwin. *Journ. R. Geogr. Soc.* vol. xlv. pp. 249–299, map. (With Geological Notes.) *See previous Abstract.*

Goodhall, J. On the Discovery of a Cut Stump of a Tree, giving Evidence of the Existence of Man in New Zealand at or before the Volcanic Era. *Trans. N. Zealand Inst.* vol. vii. pp. 144–146, pl. 6; *Proceedings*, p. 521.

During excavations in the city of Auckland, a tree-stump was discovered in its natural position, upright, with roots penetrating the surrounding clay, and covered by about 25 feet of volcanic débris, consisting of stratified beds of ooze and volcanic ash, adjacent to a volcanic centre. The clay in which the roots occur rests upon Tertiary rocks, and is 10 to 15 feet thick. The stump is said to be a "tea-tree" (Manuka), and appears to have been cut by a tool. The author thinks that it gives evidence of the "existence of man long before the period indicated by the traditions of the Maories of their advent to this island, and at a period before what is probably the oldest volcano in Auckland became extinct." R. E., Jun.

Gosse, W. C. Explorations in Central Australia during 1873. *Proc. R. Geogr. Soc.* vol. xix. pp. 51–53.

The furthest point reached, after starting from Alice Springs, was about lat. 26° 32′ S., long. 126° 59′ E. Details of 60,000 sq. miles of country were obtained. In a postscript, Mr. G. W. Goyder, Surveyor General of S. Australia, states that the geological specimens of the expedition indicate that the country traversed consists chiefly of granite. R. E., Jun.

Gregory, —. Geological Survey of Queensland; Report on the Geology of Part of the Districts of Wide Bay and Burnett. *Queenslander*, vol. x. n. ser. no. 3, p. 16.

Abstract of a Report to the Legislative Assembly. The "greenstone-trap" of the Gympie Gold-field, upon which rests the Devonian with auriferous quartz-veins, is stated to be a sedimentary rock—an opinion at variance with that previously arrived at. The Devonian slates of Queensland are only rich in mineral deposits where they hold in combination considerable quantities of lime or magnesia. The rocks in which lie the productive gold-reefs of Gympie belong to this class. They are of considerable thickness, and have a high dip. R. E., Jun.

Haast, Dr. J. Researches and Excavations carried on in and near the Moa-bone Point Cave, Sumner Road, in the year 1872. *Trans. N. Zealand Inst.* vol. vii. pp. 54–85, pls. 1 and 2; *Proceedings*, pp. 528–530, &c.

a. Introduction; *b.* Geological Features; *c.* Position of the Cave; *d.* Contents of Cave; *e.* Excavations amongst the Sand-hills outside the Cave; *f.* Conclusion; *g.* Appendices. The same as the paper noticed in the GEOLOGICAL RECORD for 1874, p. 151. R. E., Jun.

——. Notes on an ancient Native Burial Place near the Moa-bone Point, Sumner. *Trans. N. Zealand Inst.* vol. vii. pp. 86–91, pls. 3 (sections 1 and 2) and 4.

A small depression amongst the rock-bluffs which form the shore of the estuary was filled with deposits showing the following section:—1. *Marine sands*, with shells and rolled seal-bones, 4 to 7 ft.; 2. *Loam*, with angular fragments of volcanic rocks and a few moa-bones, 4 to 6 ft.; 3. *Drift sands*, 3 ft., containing the human skeletons and moa-bones; 4. *Drift sands* and *slope deposits*, with kitchen-middens. These deposits are divided in their lower portion into two by a bed of volcanic rock. Considers that this locality was used as a burial-place, probably by the race of "Moa-hunters," before the later "Shell-fish Eaters" occupied the ground, and that the uppermost beds were formed only after the older occupants had long left the ground. R. E., Jun.

——. Notes on the Moa-hunter Encampment at Shag Point, Otago. *Trans. N. Zealand Inst.* vol. vii. pp. 91–98, pl. 3 (sections 1–3).

A spit consisting of marine sands in its lower and blown sand in its higher part has been thrown across the mouth of the Shag River to a height of 60 ft. Both ovens and kitchen-middens of "Moa-hunters" and of the Maori are scattered over and through this deposit, but generally in such a way as to show that a considerable time must have elapsed between the occupancy by the two peoples. Concludes that on geological evidence alone the kitchen-middens of the "Moa-hunters" must be of considerable antiquity.

Hayter, H. H. Victorian Year-book for the Year 1874. Pp. vi and 248. 8vo. *Melbourne.*

Under Geography, gives a short history of the discovery of gold in the colony.

Hector, Dr. J. On the Modes of Occurrence of the Moa Bones in New Zealand. *Nature*, vol. xii. p. 441.

1. In turbary-deposits and desiccated swamps in almost all the valleys leading to the E. coast; 2. In cave-deposits; 3. In turbary-deposits below high-water mark, indicating a comparatively modern submersion, resting on a denuded surface of later Tertiary rocks, but without overlying marine beds. The earliest traces of the Moas found are footprints at Poverty Bay in a soft pumice-sandstone within a few inches of the upper surface. A true bird bone, probably that of an extinct gigantic Penguin, has been found in the Tertiary deposits of N. Zealand. R. E., Jun.

——. The Official Handbook of New Zealand. A Collection of Papers by Experienced Colonists, &c. Edited by Sir J. Vogel. Pp. 272. Maps, &c. 8vo. *London.*

Mineral productions and general geological remarks, pp. 37–39. In the accounts of the provinces are notices of the mineral resources as follows:—Otago, pp. 105–107; Canterbury, pp. 133, 134; Westland, p. 160; Marlborough, pp. 170, 171; Nelson, p. 182; Wellington, p. 208; Taranaki, p. 237; Auckland, pp. 246, 247. W. T.

Higgs, Samuel, Jun. Some remarks on the mining district of Yorke's Peninsula, South Australia. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part i. pp. 122–131.

The rock of the district is clay-slate, sometimes covered by Tertiary beds; both are generally overlain by an unconformable surface-crust of limestone. In the Wallaroo district the productive lodes have a bearing of 20° to 24° S. of E.; they are richer with high than with low dips, and are not productive unless the clay-slate becomes so micaceous as to assume the character of mica-schist. All the lodes have been found by surface indications. Green ore (*atacamite*) is often found in the uppermost parts of the lodes, lower down black oxide of copper, and finally the sulphides. The lodes vary from 1 to 20 ft. in width. The water in all the mines is very salt. It is estimated that more than 250,000 tons of 12 per cent. ore have been returned from this district from 1861 to 1871. C. L. N. F.

Hutton, Capt. F. W. Did the Cold of the Glacial Epoch extend over the Southern Hemisphere? *Geol. Mag.* dec. 2, vol. ii. pp. 580–583.

Considers that there is no proof of a Glacial Epoch in the S. Hemisphere. The Pleistocene shell-bearing bed at Wanganui, Cook Straits, has yielded 91 species of shells, of which 81 are still living. These give no evidence of a reduction of temperature. A newer Pliocene clay below the last at the same place has yielded 98 species, of which 77 are still found in the surrounding seas. Over the whole province of Otago no stratified till or marine beds intercalated with Glacial deposits have been met with by the author. R. E., Jun.

——. Notice of the Earnscleugh Cave, with Remarks on some of the more remarkable Moa Remains found in it by Prof. M. Coughtrey. *Trans. N. Zealand Inst.* vol. vii. pp. 138–144; *Proceedings*, p. 542.

The cave is narrow and irregular in outline, and in mica-schist. The floor is filled with fine micaceous sand to a considerable depth. Remains of *Dinornis, Cnemiornis*, the bones, nests, and eggs of an extinct genus of duck, bones of parrots and other birds, with the remains of rats, have been found in the cave, the former in the upper part near the entrance, the latter towards the extremity. There is no evidence that the remains of *Dinornis* and *Cnemiornis* were contemporaneous with those of the duck; and although these belong to an extinct genus, their antiquity does not date further back than the present century. R. E., Jun.

Hutton, F. W., and G. H. F. Ulrich. Report on the Geology and Gold Fields of Otago. With appendices, by **Prof. J. G. Black** and **J. McKerrow.** Pp. viii, 245. 11 plates (geol. map, sections, views, &c.), woodcuts. 8vo. *Dunedin.*

Part I. Geology, by F. W. Hutton.—*Introduction and Physical Geography*, pp. 1–11.—*Notices of Previous Observers*, 12–22.—*General Geological Structure*, 23–26. The main part of Otago is formed by a central N.W. and S.E. anticlinal, with a parallel synclinal on each side. All the rocks of pre-Cretaceous age take part in these curves; but the Tertiary rocks, when viewed on a large scale, lie horizontally and independently of the former. *Descriptive Geology*, 27–73; the sedimentary formations of Otago are:—1. Manipori formation, either Laurentian or Cambrian. 2. Wanaka formation, L. Silurian (?) (= "contorted felspathic schist," *Hector*); the main gold-bearing formation of Otago. 3. Kakanui formation, conformable to the last but less metamorphosed, U. Silurian (?). 4. *Kaikoura formation, unconformable to the last, Carboniferous (?). 5. *Maitai formation, Triassic, = Wairoa Series (*Hector*), Richmond sandstone (*Hochstetter*), Otapiri Series (*Hector*), Shaw's Bay Series (*Lauder Lindsay*). 6. Putataka formation, conformable to last, L. Jurassic, = Mataura Series (*Lindsay* and *Hector*). 7. Waipara formation, feebly represented in Otago, but contains coal seams, U. Cretaceous. 8. *Oamaru formation, unconformable on the last, L. Miocene, = Ototara and Trelissick groups. 9. Pareora formation, U. Miocene. 10. Ancient Glacier deposits, Older Pliocene, during which the greatest extension of the ancient glaciers took place. 11. Wanganui formation, Newer Pliocene, represented in Otago by lacustrine beds. 12. Newer Glacial deposits, Pleistocene. 13. Recent deposits. Those with * prefixed contain contemporaneous eruptive rocks.—*Historical Geology*, 74–85.—*Surface Geology*, 86–94.—*Economic Geology*, 95-120.—*Appendices*, 121–151: Bibliography; Minerals of Otago; Table of Altitudes; Analyses of Rocks and Minerals.

PART II. Gold-fields of Otago, with appendices, by G. H. F. Ulrich, pp. 153–236. Previously published as a separate Report, *see* **Ulrich,** p. 162. R. E., Jun.

Kayser, E. A. Geological and Mining Report on the Etheridge Gold-field, N. Queensland. *Queenslander*, vol. x. n. ser. no. 11, p. 24.

The Etheridge gold-field lies in a large basin at a height of 1200 ft., about 225 miles W. of Cardwell. The basin consists of six rock-formations:—*a*. Metamorphic granite traversed by auriferous quartz-reefs; *b*. Metamorphic mica-schists, associated with *a*; *c*. Hard crystalline diorite with auriferous quartz-reefs; *d*. Hard grey granite, producing a hungry, gritty soil; *e*. Porphyry, forming rough rocky ridges; *f*. Conglomerate and sandstone. The last three have not been found to be auriferous. The quartz-reefs are rich in minerals, as iron-pyrites, galena, manganese, red and brown oxide of iron, oxide of copper, ochre, and white and yellow lead-ore. R. E., Jun.

Knight, C. Anniversary Presidential Address to the Wellington Philosophical Society. *Trans. N. Zealand Inst.* vol. vii.; *Proceedings*, pp. 467–487.

Touches on the following subjects:—Fossil Reptilian Fauna of the S. Island; Denuding power of Ice; Origin and formation of the Canterbury Plains. R. E., Jun.

Lang, Rev. Dr. J. D. An Historical and Statistical Account of New South Wales, &c. Ed. 4, vol. ii. 8vo. *London.* (With map, showing position of Coal and Gold fields.)

Contains:—1. Geological structure of N. S. Wales, pp. 20–24; 2. Mineral productions, pp. 68–87; 3. The History of the Discovery of Gold in Australia, pp. 326–350; 4. Appendix 1, Description of an extraordinary natural cavern at Burran-Gilöng, in the interior of Australia, pp. 503-505. R. E., Jun.

Liversidge, Prof. A. Notes on the Bingera Diamond Field, with Notes on the Mudgee Diamond-field. (Abridged.) *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 489–492.

To a great extent identical with the paper read before Roy. Soc. N. S. Wales in 1873, and published as a pamphlet (8vo, *Sidney*) in the same year. The diamond-drift lies in a basin-shaped valley of Devonian or Carboniferous age, and in places is overlain by a basaltic flow, near Bingera. The diamonds are found near the surface of the drift only; are usually small; the individual crystals not well developed, and the faces much rounded; colourless to pale yellow or green; sp. gr. 3·42. A list of associated minerals and gems is given. R. E., Jun.

Liversidge, Prof. A. Iron and Coal Deposits at Wallerawang. *Trans. R. Soc. N. S. Wales* for 1874, pp. 81–91.

The deposits of iron are situated near the junction of the Coal Measures with the Devonian or U. Silurian, about 6 miles from the above town, and contain two varieties of ore, Magnetite and Goethite, accompanied by beds of so-called "clay-band" ironstone. *Magnetite*: the vein runs about N.E. and S.W., and is from 13 to 24 feet wide; yielded 40·89 p. c. of metallic iron. The veins are accompanied by a highly ferruginous variety of garnet. *Brown Hematite*: the ore is composed of mamillated and botryoidal Goethite, containing very little phosphorus and sulphur. *Clay-Band Ironstone*: four seams interstratified with the Coal Measures, dipping N.E. about 2°. Appears to be a brown hematite of the variety limonite. No. 2 seam gave 53·31 p. c. metallic iron; No. 3, 49·28 p. c. The Coal Measures contain three principal seams; the lowest, 17½ ft., is a hard and compact coal free from sulphur. The middle is less combustible, and contains more ash, also free from sulphur; thickness 6½ ft. The top seam will probably make a good house-coal. The lowest "clay-band" ironstone is 12 ft. above the top coal. There is also a considerable outcrop of limestone.
R. E., Jun.

Lucas, Hon. John. Mines and Mineral Statistics of New South Wales, and Notes on the Geological Collection of the Department of Mines, &c. Pp. 252; maps, plans, and sections. 8vo. *Sydney.*

Contains the following Reports and Papers:—I. General remarks on and Statistics of Gold, pp. 4–13; II. The Reports of **Messrs. Clarke, De Boos, Johnston, Dalton, Browne, Buchanan, Hutton,** and **Phillips** on their districts, 14–53; III. Statistics of Coal, 54–62; IV. General remarks on and statistics of Tin, with Report of **Mr. Gower** on the Vegetable Creek Tin-field, 62–70.

V. **C. S. Wilkinson.** Upon the Tin-bearing country of New England, pp. 70–89, sketch-sections and 5 plates.—*a. Recent.* River-drifts and other accumulations now forming; yielding stream-tin, gold, and sapphires.—*b. Pleistocene.* Drift deposits forming Alluvial flats and terraces through which the present rivers have cut their channels, all tin-bearing in granite-country.—*c. Pliocene.* Basaltic trap sometimes filling up old valleys.—*d. L. Miocene.* This must have been of considerable thickness, and once covered nearly the whole district. The base consists of waterworn drift and conglomerate, and is stanniferous. In places it has been broken up and re-deposited as a shallow surfacing near the tops of hills.—*e. Carboniferous.* Thin-bedded shales, highly inclined, probably referable to the middle part of this series, occur on Newstead Creek.—*f. Granite.* Contains many tin-lodes, and is the source of all the stream-tin of the district.—*g. Greenstone Trap.* In places between the granite and basalt boundaries.—*h. General Conclusions.* The tin-bearing granites are of at least two ages, later than the greenstone and younger than the Carboniferous. The last probably corresponds to the Hunter R. and Hawkesbury Series of Clarke. The age of the Miocene beds is determined by the presence of fossil leaves, like those in beds of the same age in Victoria.

VI. Statistics relating to Copper, Silver, and Antimony, pp. 89–94. VII. **Prof. Liversidge.** On the Iron Ore and Coal Deposits at Wallerawang, pp. 94–103 (*see* p. 155). VIII. Statistics of Gem Stones, pp. 103, 104. IX. **Prof. Liversidge.** On the Bingera Diamond Field, &c., pp. 104–116 (*see* p. 155).

X. **C. S. Wilkinson.** Notes on the Geological and Mineralogical Collection exhibited at the Metropolitan Intercolonial Exhibition, 1875, pp. 117–148. The formations in N. S. Wales are as follows:—*a. Recent.* Including deposits now accumulating, and of economic importance from the predominance of alluvial gold and stream-tin.—*b. Pleistocene.* Alluvial flats and terrace-like plateaux at various elevations along the course of rivers and creeks, deposited whilst the present valleys were being eroded. These important Recent drifts are equally rich in gold and tin, and have yielded the remains of gigantic Marsupials and of the Moa.—*c. Pliocene.* After the deposition of the Miocene beds the Australian continent was submerged, and marine auriferous gravels and clays deposited (L. Pliocene). Emergence and denudation followed, resulting in the present system of valleys and accumulation of fluviatile drifts (U. Pliocene). At the close of this sub-period volcanic outbursts occurred, filling many of the valleys, and forming the basaltic downs. These old buried river-channels now form the "deep-leads;" and from them have been obtained remains of trees, &c.—*d. L. Miocene.* Drift deposits at elevations of 2000 to 3000 ft. above the sea-level, containing leaves like those of the Bacchus Marsh leaf-beds of Victoria. They exceed the other Tertiary alluvial deposits in the richness of their tin-ore.—*e. Mesozoic.* A coal-bearing series on the Clarence River, with fossil plants allied to *Tæniopteris* and *Pecopteris*, perhaps the equivalents of the Mesozoic coal strata of Victoria.—*f. Palæozoic.* With the following subdivisions:—Wianamatta and Hawkesbury series, without workable coal-seams; U. Coal Measures, with *Glossopteris*, *Phyllotheca*, &c., and containing at least 16 coal-seams; U. Marine beds, with Palæozoic fossils; L. Coal Measures of Anvil Creek, with *Glossopteris*, &c.; L. Marine beds, with Palæozoic fossils; Lepidodendron beds, below the L. Marine series of the Hunter district; Devonian strata, traversed by thin quartz-veins in the Rydal and Wallerawang districts, and containing a copious fauna; the Rydal beds are over 10,000 ft. thick.—*g. Igneous Rocks.* Granites of various ages, but none probably younger than Carboniferous. Many are intrusive, and others, doubtless, metamorphic. Gold is found in the alluvial drift derived from these granites. Concludes with remarks on the specimens of gold, copper, tin, iron, marble, &c. in the collection.

XI. **Rev. W. B. Clarke.** Remarks on the Sedimentary Formations of New South Wales, &c., pp. 149–206; 2 vertical sections (also published separately, *see* p. 148). XII. **J. Mackenzie.** Supplementary Report of the Examiner of Coal-fields, pp. 207–247, with 5 plans, 7 longitudinal sections, 10 sheets of vertical sections: also illustrated by a series of vertical woodcut-sections of the coal-seams worked in the collieries of the N. S. Wales Coal-field. The conformable nature of the overlying beds containing Palæozoic marine fossils with the coal-seams and interstratified shale containing *Glossopteris* and other plants is shown by these. XIII. **R. W. Moody.** Description of Coal-seams at Mt. Kembla, near Wollongong, pp. 249–252 (1 vertical section). The seams crop out on the slopes of the Mt. Kembla Ranges, and are nearly horizontal. R. E., Jun.

McKay, A. On the Identity of the Moa-hunters and the present Maori Race. *Trans. N. Zealand Inst.* vol. vii. pp. 98–105; *Proceedings*, p. 493.

Describes the excavation of the Moa-bone Point Cave, Sumner (*see* **Haast**, GEOLOGICAL RECORD for 1874, p. 151).

Mackay, T. The Glacial Period of New Zealand. *Trans. N. Zealand Inst.* vol. vii. p. 447.

Considers that palæontological research is at present the best means of ascertaining the distance of time at which our Glacial periods occurred. R. E., Jun.

Manning, J. Sydney Water Supply by Gravitation. *Trans. R. Soc. N. S. Wales* for 1874, pp. 41–56.

Gives a few geological items in a note at p. 56. Considers the sandstones over the Coal on the Illawarra Ranges to be the same as the "*Grès-houiller*" of the French. The greatest storage reservoir of water for Sydney is to be found in this high coast-range. The dip is slight and north-westerly. R. E., Jun.

Mulligan, J. V. Preliminary Report of the Mulligan Exploring Expedition in N. Queensland. *Queenslander*, n. ser. vol. x. no. 8, p. 23.

Around the junction of the Rivers Lynd and Tate the country is composed of a "conglomerate sandstone." Westerly, between the Lynd and the Staaten R., Desert Sandstone prevails. Granite was found at the headwaters of the Coleman R. Indications of gold were obtained on the Rivers Lynd, Fahy, Coleman, and King, on the W. side of the main dividing range; and tin-ore was found on the Lynd. R. E., Jun.

Mundy, D. L. Rotomahana; and the Boiling Springs of New Zealand. Map (not geological). 4to. *London.*

16 photographic views of boiling springs, tufaceous and mud deposits, &c., with descriptions (partly geological) by **Dr. F. von Hochstetter.** The map shows the various hot and cold lakes, and the direction of the line of volcanic action from Mount Tongariro.

R. E., Jun.

Nicholas, W. Notes on the Quartz-reefs, or Lodes, of Sandhurst, Victoria, Australia. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. 1, pp. 78–97.

The quartz-reefs occur in L. Silurian slates and sandstone. The average strike of reefs and strata is 23° W. of N. The slates contain *Graptolites* in abundance. Near the reefs crystals of iron-pyrites frequently occur in the enclosing rocks, and they are looked upon as a good indication for gold. Above the water-level the pyrites is decomposed into oxide of iron; and the ferruginous walls of a reef are known as the "ironstone casing," which is sometimes rich enough in gold to be worth working. The reefs average 3 ft. wide, and consist almost entirely of quartz, with a little iron-pyrites, galena, manganese, felspar, mica, and gold. The richer the reef is in minerals the richer it generally is in gold. The presence of galena is particularly favourable for productiveness. C. L. N. F.

Purnell, C. W. On the Wanganui Tertiaries. *Trans. N. Zealand Inst.* vol. vii. pp. 453–457; *Proceedings*, p. 496.

The oldest fossiliferous bed of the "Wanganui Formation" within 4 miles of the town of Wanganui is a volcanic tuff. The characteristic bed is the succeeding stratum of blue clay, highly fossiliferous, and 40 feet thick at Shakespeare Cliff. The mollusca indicate a coast-line between high-water mark and a depth of 100 fathoms. The youngest beds consist of volcanic mud, gravel, and loose grit. According to Capt. Hutton the whole series contains 76 p. c. of recent shells, which the author states would make the beds of about the same age as the Sicilian volcanic tuffs (Newer Pliocene). According to his view, however, the organic remains of the three divisions should be examined separately, and the proportion of recent to extinct shells ascertained in each, before the comparative ages can be determined. R. E., Jun.

Smyth, R. B. Report of the Chief Inspector of Mines to the Honorable the Minister of Mines for the year 1874. No. 14, with appendices. Pp. 37. Fol. *Melbourne.*

——. Geological Survey of Victoria. Report of Progress. No. 2, for 1874. Pp. vi and 141; 5 plates (maps and sections); woodcuts of sections, fossils, &c. 8vo. *Melbourne.*

The areas occupied by the Older Volcanic rocks in W. Gippsland have been found to be greater than was supposed. The Lignite-beds of the Upper Latrobe River in many places underlie the Older Volcanic rocks, whilst on the R. Tarween beds of gravel and clay, on which rests a bed of lignite supposed to occupy a similar position, are auriferous. The horizontal ochreous sand beds at Eagle Point, R. Mitchell, are marine, and the probable equivalents of the Flemington beds near Melbourne. The relation of the so-called U. Palæozoic rocks to the Devonian Limestones of Bindi has not been established. The auriferous gravels of the Omeo gold-field appear in places to have formed the beds of lakes. In W. Victoria a large patch of U. Silurian rocks with auriferous quartz-veins occurs S. of Lake Cooper, whilst the country N. is occupied by the Murray Tertiaries. Fossils from a deposit overlying a gold-drift near Stawell, and figured in this Report, indicate that the beds are of the same age as the Melbourne Flemington series. The auriferous drift, traceable from Stawell to Ararat, belongs to the fossiliferous series of the Wimmera district. Remarks on the correlation of the Victorian auriferous drifts, deep-leads, and fossiliferous Tertiary rocks, and on the past and present flora follow. Remarks on the gold-fields and mineral districts complete this part.

Ten special Reports follow:—1. **A. W. Howitt.** Notes on the Geology of Part of the Mitchell River Division of the Gippsland Mining District, pp. 59–73. Describes deposits of the following periods:—*Recent.*—*U. Tertiary*, or Moitun Creek group, consisting of sandy and clayey marine beds 400 to 500 ft. thick. These overlie the older formations, and fill a deeply excavated area at the contact of the Bairnsdale limestones and Avon sandstones.—*Middle Tertiary*, or Bairnsdale Limestone Group. Varies from a yellow friable calcareous rock to a hard yellow limestone with marine fossils; covers a large area from W. of the Mitchell R. to the E. side of Lake Tyers.—*Avon River Sandstone Group* (Carboniferous). These beds, which consist of a thick series of sandstones, grits, conglomerates, and thin shales, once formed an anticlinal arch over N.E. Gippsland, but have suffered greatly from denudation. Two groups are recognizable, the lower with plant remains, which McCoy thinks may be U. Devonian. The Avon sandstones at Mt. Alfred, &c. rest upon trappean rocks of varying lithological characters; they are younger than the L. Silurian but older than the Avon River group.—*L. Silurian.* A series of unfossiliferous slates and felspathic and micaceous sandstone, dipping at a high angle, form the oldest rocks. Concludes with remarks on the gold-workings.

2. **A. W. Howitt.** Notes on the Geology of the Ovens District, with Remarks on the Deep Leads, pp. 74–82, plate 1 (sketch section from Wahgunyah to Mt. Stanley). The formations of the S.E. part of the district are Silurian and granite, forming a hilly and mountainous country, in which are the gold-workings of Beechworth, Yackandandah, &c. The S.W. part consists of the "Murray Tertiaries," forming generally a low and level country. The Silurian strata of Beechworth have been generally affected by slaty cleavage, and the granites have been intruded after the tilting and folding of the Silurian rocks and the formation of the auriferous quartz-veins. At Tarrawingee, near Beechworth, are a series of thick sandstones and grits, which may be U. Palæozoic or Mesozoic. The deep-leads of Wahgunyah, &c. represent the former extensions of the present streams, and are from 300 to 400 ft. below the present surface. Considers that since the deep-lead epoch a subsidence of about 1000 ft. has taken place, followed by a re-elevation, but not so great. The alluvial gold of the Beechworth district has been derived from the Silurian rocks and not from granite.

3. **N. Taylor.** Report on the Geological Survey of the Stawell (Pleasant Ck.) Goldfield, pp. 84–92, plate 2 (Section of Commercial Street Lead, Stawell). The *Granite* around Stawell consists of a tertiary compound of probably two varieties of felspar, quartz and black mica. The metamorphic rocks near the granite-boundary are much altered. The elvan dykes are usually met with in sinking on the reefs and in the "leads," are generally hard, but where overlain by drifts are decomposed into a soft kaolin, and are believed to be older than the quartz-reefs. The *Quartz-Reefs* are now worked at a depth

of 900 ft. The *Metamorphic Rocks* consist of foliated gneissose schist, passing into gneiss, L. Silurian, or perhaps older; they pass into unaltered fissile shales and thin sandstones, and decompose quickly into a soft white rock. The *Older Pliocene* consists of ferruginous sandstones and grits, and conglomerates of quartz-pebbles, &c., forming nearly level plains. Thin beds of concretionary ironstone ("pot-metal") occur, some containing marine fossils—the only known instances of such in connexion with gold drifts. *L. Newer Pliocene*, represented by the Deep Lead, from 40 to 100 ft. deep, and Commercial Street Lead with their tributaries. *Up. Newer Pliocene*, beds of ferruginous grit and semiangular quartz-conglomerate occurring at higher levels than the older Tertiaries. *Pleistocene*, or cemented granitic detritus in horizontal beds probably occupying the whole width of the valleys running from the granite.

4. **Krausé, F. M.** Notes on the Geological Survey of Ararat, pp. 93–99.—*Post Pliocene*, most recent gold drift, or alluvium of the gullies and creeks, consisting chiefly of mud and clay with sand and gravel sparingly distributed, and barren of gold, with a few exceptions.—*U. Newer Pliocene.* Recent Gold Drift, equally distributed drifts left by a receding sea and composed of clay and angular gravel, from a "capping" to over 100 feet thick, and layers of ferruginous cement; the whole sparingly auriferous.—*L. Newer Pliocene.* Older Gold Drift, most of the "deep leads" are referable to this; they rise to a height of 1250 feet above the sea-level, and have been traced down to 800 feet. They are fluviatile, and contain subfossil trunks of trees.—*Newer Volcanic Rocks.* Two extensions of the great Warrnambool volcanic area extend to within 7 miles E. of Ararat. Borings along the river Hopkins show that there are 3 layers of lava (cellular dolerite) with intervening beds of clay and scoriæ.—*Older Pliocene.* Oldest Gold Drift. These drifts occur as outliers capping hills at a height of 1100 feet above the sea-level, and finally form an unbroken gently sloping plain down to the Wimmera basin; they are marine.—*Silurian.* The Palæozoic rocks are presumed to be of this age; there seems to be a persistent W. dip for 4 miles.—*Metamorphic.* Near the granite-boundary the Palæozoic rock changes into mica-schist, diorite, &c.—*Porphyritic Rocks.* Dykes of quartz and felspar-porphyry occur from 3 to 30 feet thick, and can be traced for 3 or 4 miles. They correspond to the strike and dip of the altered Silurian, and in one case penetrate the granite.—*Quartz Reefs.* None of the well-defined reefs have been found to be payably auriferous.—*Granite*, a fine-grained ternary rock.

5, 6, 7. Reports by Messrs. **Murray**, **Etheridge**, and **Nicholas**. See Geological Record for 1874, pp. 150, 155.

8. **W. Nicholas.** Report on the Geological Features of the country near Mount Piper, pp. 121–125, plate v. (Plan of the U. Silurian and Newer Volcanic Rocks between Tullarook and Kilmore). The country surrounding Mt. Piper consists of U. Silurian strata, overlain in parts by the newer Volcanic Lava. The hills on the left of the Goulburn River are covered by quartz-gravel. Just S. of Tullarook a patch of

granite occurs. Sulphide of antimony is said to have been found near Broadford.

9. **G. H. F. Ulrich.** Observations on the Waratah Bay Limestone, pp. 125, 126. The outcrop is on the W. shore near C. Liptrap; and the limestone appears to be conformably overlain by ferruginous sandstone. It is a crystalline, granular, black and white mottled and veined marble, suitable for ornamental purposes: probably U. Silurian.

10. **J. C. Newbery.** Laboratory Report of Analyses, Examinations, and Assays of Specimens from Mining Districts, pp. 127–134. Comprises assays of Lignite and Coal, Iron, Copper, Antimony Ores, Tin, Lead, Bismuth, and Limestones, Analyses of Water, and Auriferous Pyrites, with Rock and Mineral determinations. Further discoveries of the rare mineral *maldonite* in the Eaglehawk Union Company's Mine at Maldon are recorded. R. E., Jun.

Travers, W. T. L. Notes on Dr. Haast's supposed Glaciation of New Zealand. *Trans. N. Zealand Inst.* vol. vii. pp. 409–440; *Proceedings*, p. 497.

Inquires into and controverts the views of Dr. Haast. The views of the two writers coincide on one point only, that the glaciation took place with an elevation of the land. Mr. Travers considers it to have taken place at the close of the Miocene, and to have continued during great part of the Pliocene period; whilst Dr. Haast believes that the islands of N. Zealand were submerged during and until the close of the Tertiary epoch, the glaciation commencing coincidently with the re-emergence of the land. Again, the author thinks that the glaciation was such as would occur in the latitude of New Zealand, in a range of mountains averaging 14,000 feet in height, whilst Dr. Haast compares it to the present condition of Greenland. The two writers differ also as to the origin of this glaciation and its subsequent disappearance. One of the chief points brought forward as antagonistic to Dr. Haast's view of the extreme glaciation is the absence of boulder clay or till resembling that found in many parts of Scotland, &c. R. E., Jun.

Ulrich, G. H. F. Report on the Gold Fields of Otago to His Honour the Superintendent of the Province of Otago. The Auriferous Quartz Reefs and Crushing Machines of the above, with Remarks on Auriferous Drifts and Occurrences of Copper Ore, Cinnabar, Grey Antimony, and Brown Coal in Different Parts of the Province. Pp. 33, 2 plans (not geological). Fol.

The Auriferous Reefs, except those at Portobello, are in metamorphic schist, argillaceous mica-schist, or phyllite, changing into mica-schist, rich in interlaminations of quartz. They differ in structure and mode of development, and are classed in 6 groups:—1. True lodes, promising permanency in depth, and resembling the "Block Reefs" of Victoria. 2. Reefs not of solid quartz throughout, but of blocks of quartz and "mullock" intermixed. 3. "Quartz-mullock reefs," soft clayey ferruginous material, with the quartz in the form of coarse sand, and small angular and slightly rounded pieces. 4. Massive lodes, from 4 to over 20 feet thick, having well-defined walls with clay casings; some are traceable for miles along the strike. 5. Either "layer lodes," or interlaminations between the beds of phyllite. 6. The so-called Peninsula Quartz Reef at Portobello, where the gold is disseminated in a finely divided state through trachyte-rocks. The auriferous drifts are divided into newer and older. The former comprise the terrace formations of shingle and sand worked by sluicing; the latter, deposits of harder gravel and cement, known as "false bottom," underlying the newer drift in certain old lake-basins, with cement and gravel on the tops of some of the ranges. There are notes on the occurrence of the minerals mentioned in the title, and 12 appendices, comprising descriptions of various auriferous reefs. R. E., Jun.

Ulrich, G. H. F. Geology of Victoria. A Descriptive Catalogue of the Specimens in the Industrial and Technological Museum (Melbourne), illustrating the Rock System of Victoria. Pp. 108. 8vo. *Melbourne.*

A reprint of part of the Technological Museum Report of 1874 (see GEOLOGICAL RECORD for 1874, p. 214). The nomenclature, system, and basis of classification adopted are those of Dr. Zirkel, Dr. Senft, Von Cotta, and others. The geological notes are from personal observations and extracts from the reports of Mr. Selwyn and assistants. R. E., Jun.

Warburton, Col. P. E. Journey across the Western Interior of Australia; with an Introduction and additions, by **C. H. Eden**; edited by H. W. Bates. Pp. ix, 307; map, &c. 8vo. *London.* See also *Proc. R. Geogr. Soc.* vol. xix. pp. 41–51.

The introduction contains a few geological notes relating to former expeditions. The Mount Wedge Range contains some remarkable "glens;" the predominating rock appears to be basalt. Central Mount Wedge is an isolated hill 1650 feet above the high saddle on which it rests, with, at its E. side, a perpendicular scarp of red rock 615 feet high. From the Mt. Wedge Range to Mt. Farewell the prevailing rock appears to be granite in isolated hills, mounds, and patches. From long. 121° E. to 131° E. the country is occupied by the "Great Sandy Desert" composed of sand hills and red sand ridges interspersed with salt lagoons, clay pans, and soda springs, passing northwards along the 20th degree of latitude into a high sandy tableland. The sand ridges vary much in height and distance apart, the average being 80 feet high, and 300 yards from one another. They run parallel with one another E. and W., but, unlike most sandy deserts, are clothed with some vegetation. A note by **Prof. Owen**, "On the Physical Configuration of Australia, and its Geological Causes," is appended. R. E., Jun.

Wellington, William. Notice on Mount Bischoff, Tasmania. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 161, 162.

Thinks that the top of Mount Bischoff is the crater of an extinct volcano, and that the tin-ore and granite have been thrown up by eruptions from it. C. L. N. F.

New Zealand, Geological Survey of. Tenth Annual Report on the Colonial Museum and Laboratory. 8vo. *Wellington.*

Victoria. Reports of the Mining Surveyors and Registrars for Quarters ending Dec. 31st 1874.—No. 1, pp. 40; March 31st, 1875. No. 18, pp. 40; June 30th. No. 48, pp. 42, 1 plate; Sept. 30th, 1875. No. 60, pp. 38, with appendices. Fol. *Melbourne.*

Gives statistics of the yield of gold and other minerals; returns and reports of the mining surveyors and registrars. In No. 1, **W. G. Couchman** gives a "*Special Report on the Berlin Gold Diggings*" (p. 40), where the workings are confined to alluvial deposits consisting of hard "cement," from 25 to 47 ft. thick. No. 18 contains a section (p. 30), by **A. B. Arrowsmith**, of a "*Deep Shaft in the Hope Mine, Wood's Point.*" In No. 48 **Baron von Müller** continues his "*Observations on New Vegetable Fossils*" (see *post*). R. E., Jun.

——. Philadelphia Centennial Exhibition of 1876. Official Record, containing Introduction, Catalogues, Official Awards of the Commissioners, Reports and Recommendations of the Experts, and Essays and Statistics on the Social and Economic Resources of the Colony of Victoria. 8vo. *Melbourne.*

See also:—

Blanford, H. F. Indo-Oceanic Continent: p. 134.

Daintree, R. Microscopic Structure of Igneous Rocks: *post*, under PETROLOGY.

Dana, Prof. J. D. Corals and Coral Islands: *post*, under PHYSICAL GEOLOGY.

Gould, C. Discovery of Tin Ore in Tasmania: *post*, under MINERALOGY.

Mackenzie, J.: *post*, under ADDENDA.

Newton, E. T. Tasmanite and Australian White Coal: *post*, under PETROLOGY.

Pond, J. A. Chemical Properties of some Strata, Mount Eden (N. Zealand): *post*, under PETROLOGY.

Skey, W. Formation and Constitution of Torbanite, &c.: *post*, under PETROLOGY.

8. *OCEANIA* (*AND VARIOUS ISLANDS*).

Anon. The Voyage of the 'Chevert' to New Guinea. *Nature*, vol. xiii. p. 153.

Abstract of an account in the *Sydney Morning Herald* of W. Macleay's Exploring Expedition. Yule Island, Hall Sound (S.E. New Guinea), consists of a calcareous rock with fossils resembling recent forms. R. E., Jun.

——. The New Caledonian Nickel Deposits. *Iron*, vol. vi. p. 711.

On the W. slope of the Grand Mont d'Or, Noumea, a large area is covered by the rock locally known as "Nickel-stone."

Balfour, Dr. I. B. On the Flora and Geological Structure of the Mascarene Islands. *Nature*, vol. xii. p. 441.

Mauritius and Rodriguez Island are surrounded by small volcanic and coral islands. Whether these islands owe their origin to independent volcanic action, or to the submergence of an ancient connexion with Africa, is not known. R. E., Jun.

Bird, J. L. The Hawaiian Archipelago. Six months among the Palm Groves, Coral Reefs, and Volcanoes of the Sandwich Islands. Pp. viii and 473. 8vo. *London.*

Geological formation volcanic. The volcano of Kilauea, at a height of 4000 ft. on the flanks of Mauna Loa, in Hawaii, is the highest continually active volcano in the world. Mauna Loa is 13,750 ft., and has an occasionally active summit crater. Mauna Kea, 13,953 ft., is snow clad; its terminal cone consists of volcanic tufa, and is craterless, but surrounded by many truncated cones, all with craters, the outer slopes of which are at an angle of 30°. The crater of Haleakala, 10,200 ft., the largest extinct volcano known, is about 19 miles in circumference. A map of this is given (p. 333). R. E., Jun.

Chambeyron, L. Note relative à la Nouvelle Calédonie. [New Caledonia.] *Bull. Soc. Géogr. Paris*, pp. 566–586.

Remarks on the soils. Description of the Barrier and Fringing Reefs.

Chantérac, Ch. de. Étude sur la formation des îles et récifs madréporiques des mers de l'Océanie et de l'Inde. [Formation of the Coral Islands and Reefs of the South Seas and Indian Ocean.] *Rev. Mar. Col.*, March, pp. 626–637.

Clarke, Rev. W. B. Anniversary Address to the Royal Society of New South Wales for the year 1875–76. *Sydney Morning Herald*, May 13, pp. 6–8 (9 columns).

Principally consists of two parts, the first relating to some of the results derived from the voyage of the 'Challenger,' the second a sketch of the Geology of New Caledonia. The following formations had been recognized, chiefly by means of fossils:—Quaternary, with species still living; L. Neocomian; U. Lias, with *Nucula Hammeri*; L. Lias, with *Ostrea sublamellosa*, &c.; U. Trias, with *Halobia Lomelli*; L. Trias, with *Pellatia Garnieri*; U. Devonian and U. Silurian; Azoic (mica-schist). The most important formation appears to consist of eruptive magnesian rocks, in which are found the deposits of chromic iron-ore and the nickel mineral for which the island has become celebrated. Specimens of the nickel mineral were forwarded to Prof. Dana, who accepted Mr. Clarke's name, "*Garnierite.*" R. E., Jun.

Corner, A. Journey in the Interior of Formosa. *Proc. R. Geogr. Soc.* vol. xix. p. 515.

S. of the harbour of Takao a fossiliferous limestone occurs; a part containing *Monotis Hawni* may be Permian. At Kao Siah occurs slate which would probably make a good building material. R. E., Jun.

Drasche, Dr. R. von. Mittheilungen von Bourbon. *Verh. k.-k. geol. Reichs.* pp. 266.

The Isle of Bourbon consists chiefly of olivine-bearing basalt: the older parts show trachyte, hornblende, and plagioclase rocks.

Eaton, Rev. E. A. First Report of the Naturalist attached to the Transit of Venus Expedition to Kerguelen Island. *Proc. R. Soc.* vol. xxiii. p. 351; *Nature*, vol. xii. p. 35.

Some of the most salient features are the Basaltic terrace-like hills.

Garnier, Jules. [Nickel in New Caledonia.] *Rev. Géol.* t. xii. p. 98.

Workable deposits have been found at Kanala, along the Dumbea, and the Huantio and elsewhere. The ore occurs in masses, nodules, and more or less impregnated beds, not in veins. G. A. L.

——. Les mines de la Nouvelle Calédonie. [Mines of New Caledonia.] *Explor. géogr.* no. 13, pp. 296, 297.

Gräffe, Dr. E. Samoa oder die Schiffer-Inseln. 3. Abschnitt. Geologische Notizen. [Geology of Samoa.] *Journ. Mus. Godeffroy*, Heft vi.

Groot, C. de. Verslag over de zuider- en ooster-afdeeling van Borneo, door den Mijningenieur. [Report on the S. & E. portion of Borneo by the Mining Engineers.] *Jaarb. Mijn. Ned. O.-Ind.* t. ii. pp. 3–84; 2 maps.

Lyman, B. S. Geological Survey of Japan. *Geol. Mag.* dec. 2, vol. ii. pp. 190, 191.

Refers to the work of the Survey, especially to the method of showing the underground levels of coal-beds by contour-lines.

Melliss, J. C. St. Helena; a Physical, Historical, and Topographical Description of the Island, including its Geology, Fauna, Flora, and Meteorology. Pp. xiv, 426; plates. *London.*

Part II. *Geology and Mineralogy*, pp. 46, with sketch map, sections, &c. The rock masses are volcanic. The vent from which the lavas, ashes, and mud composing the island have come forms that part in the S. end called Sandy Bay. The old crater is 4 miles across, with its S. edge beneath the sea. The N. edge forms Sandy Bay Ridge, on which are some of the highest peaks—Diana's Peak, 2679 feet, and the High Peak, 2635 ft. The floor of the crater is crossed by many dykes running N.E. and S.W., along the course of some of which monolithic pillars have been left, as "Lot," 290 ft. high, 100 ft. thick at the base, and "Lot's wife," 260 ft. high. Outside the edge of the crater the layers of mud, rubble, and lava forming the mass of the island are visible; on the N. side, 40 to 50 beds of lava and 11 of mud may be seen. The volcanic mud, "ochre," or laterite beds are from a few inches to several feet thick, and here and there contain traces of small plant-roots. The rubble or agglomerate beds are composed of small stones, cinders, and ashes, and are usually 2 to 3 feet thick. Cylindrical holes are found in these beds, which are thought to be casts of trunks of trees. The lava-beds, of which 60 to 70 are recognizable, vary much in composition and texture; some are hard and compact; others scoriaceous and vesicular. The N.E. and W. parts of St. Helena are intersected by deep gorges or ravines originating in the high grounds near the crater-edge, and wider and deeper towards the coast line. Their formation is ascribed to the action of rain and other atmospheric agents on pre-existing hollows in the newly formed surfaces of the flows. A slight upheaval is supposed to have taken place along the N. part of the Island, and slightly tilted seawards that part which lies on its outer side. St. Helena is believed to have been both much higher, longer, and broader than now. The peculiar fauna and flora in themselves point to a great antiquity. A calculation from the apparent rate of denudation gives about 40,000 years as the age of the Island. Earthquakes are not common, only 4 having been known in the last 370 years. There are no hot springs, and the minerals are not of importance. There is no evidence to show that St. Helena was ever connected with any continental land. R. E., Jun.

Moresby, Capt. J. Discoveries in Eastern New Guinea, by the officers of H.M.S. 'Basilisk.' *Journ. R. Geogr. Soc.* vol. xlv. pp. 153-170; map (not geological).

The newly discovered islands at the E. end of N. Guinea are chiefly lofty and volcanic, although some are low and of coral formation. On the W. side of Ferguson Is. (D'Entrecasteaux group) recent upheaval is shown by the occurrence of masses of coral some distance inland; boiling alkaline springs also occur on its N. side. On the shore of the inner harbour of Port Moresby gold-quartz was discovered, and again at Pitt Bay, Moresby Is., in the bed of a stream. Lesson Is., off Cape De la Tarre, is an active volcano. R. E., Jun.

Munroe, H. S. The Gold Fields of Yesso. Geological Survey of Hokkaido. 80 pp. *Tokio, Japan.*

Renaud, G. P. A. Verslag van de Kohlenmijn Oranje-Nassau te Pengaron, in de zuider- en ooster-afdeeling van Borneo. [Coal Mines of Orange-Nassau at Pengaron, S.E. Borneo.] *Jaarb. Mijn. Ned. O.-Ind.* ii. pp. 85–117; 3 plates.

Thomson, Prof. W. Report to the Hydrographer of the Admiralty on the Cruise of H.M.S. 'Challenger' from June to August, 1875. *Proc. R. Soc.* vol. xxiv. p. 33; 5 plates.

Contains geological items.

Vélain, C. Les îles Saint-Paul et Amsterdam. [St. Paul and Amsterdam Islands.] *Rev. Sci.* p. 121.

Describes their geological and physical features.

Verbeek, R. D. M. Geologische Beschrijving der Distrikten Riam-Kiwa en Kanan in de zuider- en ooster-afdeeling van Borneo; volgens opneming in de Jaren 1869 en 1870. [Geological Description of the Districts of Riam-Kiwa and Kanan in the S. and E. parts of Borneo.] *Jaarb. Mijn. Ned. Oost-Ind.* Jaarg. 4, Deel i. pp. 1–130; chromo-lith. maps, 2 plates, 15 woodcuts.

In addition to geological observations, the author gives petrological descriptions of numerous rocks, and in chapter 7 describes the occurrence of certain minerals in the alluvial deposits. These consist of diamonds, platinum, gold, and chrome iron-ore. The largest diamond found of late years in Borneo was met with at Tjempaka in 1868, and weighed 25 carats. Analyses of platinum ore are given. The Borneo mineral Laurite has not been found in the platinum sands of Tjempaka. F. W. R.

——. De Nummulieten mit den Eocenen Kalksteen van Borneo, mit twee platen. [Nummulites in the Eocene Limestone of Borneo.] *Jaarb. Mijn. Ned. O.-Ind.* t. ii. pp. 133–161; one plate of Geological Sections and one of Fossils.

——. Ueber die Gliederung der Eocänformation auf der Insel Borneo. [Eocene of Borneo.] *Paleontographica*, Suppl. iii. Lief. 1, pp. 3–9; woodcut.

Introductory to Dr. Böttger's memoir (see *post*). The coal-bearing strata of Borneo are Eocene, and contain Nummulites abundantly in the Upper Calcareous division: greatest thickness 1500 ft.: the coals are in the lower division, argillaceous group; 5 are workable, having a combined thickness of 24 ft. E. B. T.

——. On the Geology of Central Sumatra. *Geol. Mag.* dec. 2, vol. ii. pp. 477-486; 3 woodcuts (map and 2 sections). Errata in vol. iii. p. 382.

The oldest rocks are granites and syenites. On these are Carboniferous or Permian rocks. The next sedimentary rocks are Tertiary; these are classed into 4 groups, in one of which coal is found. Quartz-porphyries and greenstone are pre-Tertiary. Trachytes are

Middle or late Tertiary; and this seems to be the case also in Java and Borneo. There is a short description of the Island of Nias, and a list of papers on the Geology of Sumatra. W. T.

Vidal, Dr. A. Voyage de Yeddo à Niigata. [From Yeddo to Niigata.] *Mém. Soc. Sci. Phys. Nat. Toulouse*, t. i. 55 pp.

Wichmann, Dr. A. Zur geologischen Kenntniss der Palau-Inseln. [Contribution to the Geological Knowledge of the Pelew Islands.] *Journ. Mus. Godeffroy*, Heft viii. pp. 123–127; *N. Jahrb.* p. 656.

Kubary has distinguished two divisions in these islands, the N. group being composed of Tertiary or post-Tertiary eruptive rocks, and the S. of Corals. The eruptive rock resembles basalt, being composed of a brown glassy matrix with crystals of augite, plagioclase, and sanidine. The author calls the rock augite-andesite, and gives two figures of microscopic slices. Andesite-tuffs, associated with the eruptive rocks, are described. Over the tuffs lie ferruginous clays. On the E. side of the Island of Baobeltaob is a stratified zoogenous breccia mostly composed of marine animal remains, foraminifera, and bivalve shells, underlain by another stratified deposit containing rounded granules of quartz and felspar. Gravels on the beach indicate the presence on some neighbouring sea-bottom of a syenite-granite. The coralline-limestone series which forms Kubary's second division is filled with species of the following genera—*Tridacna*, *Strombus*, *Mactra*, *Cyprina*, *Lucina*, *Tellina*, *Venus*, *Spondylus*, *Madrepora*, *Serpula*, *Balanus*, *Fistulana*. The depression which has already been proved in the case of a large number of the Pacific Islands is corroborated in the Pelew Islands by the fringing reefs which enclose almost all the islands, and the barrier-reef surrounding the group. R. L. J.

See also:—

Clarke, Rev. W. B. Sedimentary Formations, N.S. Wales. (Notes on New Caledonia): p. 148.

Dana, Prof. J. D. Corals and Coral Islands: *post*, under PHYSICAL GEOLOGY.

Verbeek, R. D. M., and Dr. O. Böttger. Eocene, Borneo: *post*, under INVERTEBRATA.

PHYSICAL GEOLOGY.

1. *VOLCANIC AND SUBTERRANEAN PHENOMENA; METAMORPHISM.*

Anon. Des affaissements du sol attribués à l'exploitation houillère. [On "Creeps."] Comité de l'Union des charbonnages, mines, et usines métallurgiques de la province de Liége. 335 pp.; atlas of 22 plates. 4to. *Liége.*

Brown, A. J. The Formation of Fissures, and the Origin of their Mineral Contents. *Trans. Amer. Inst. Min. Eng.* vol. ii. pp. 215–219.

Refers to American mining districts. Concludes that fissures are formed in nearly all cases by earthquakes, that they have been filled by melted injections, by aqueous agencies, or by sublimation, and that the minerals are not derived from the wall-rock, but from below the zone of sedimentary rocks. W. W.

Burton, Capt. The Volcanic Eruptions of Iceland in 1874 and 1875. *Proc. R. Soc. Edin.* vol. ix. no. 93, pp. 44–58; 2 maps.

Gives facts relating to the eruptions, and indicates on the maps the E. and N.E. limits of the ash-showers N.E. of the Vatna Jökull.

Carruthers, John. Volcanic Action regarded as due to the Retardation of the Earth's Rotation. *Phil. Soc. Wellington, N. Zealand.* Pp. 20. 8vo. *Wellington.*

Chancourtois, A. E. B. de. Sur le Réseau pentagonal de M. Elie de Beaumont. [Elie de Beaumont's Pentagonal Network.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 328–343.

An approving résumé of Elie de Beaumont's Pentagonal system.

Cossigny, A. E. B. de. Sur la corrélation qui existe entre les oscillations du sol et la configuration des côtes de la mer. [Relation between Oscillations of Land and Configuration of Sea-coasts.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 358–367, 5 figs. in text.

Shows the connexion between *cordons littoraux* (raised beaches) and the rising of the land. Attributes to the latter the gradual silting up of the Petit-Rhône. G. A. L.

D[ana], J. D. Notice of Prof. Shaler's paper on Recent Changes of Level on the Coast of Maine, with reference to their origin and relation to other similar changes. *Amer. Journ.* ser. 3, vol. ix. pp. 316–318.

Discusses approvingly Prof. Shaler's views as to the depression of the land occupied by the ice during the glacial period being due to the weight of the ice itself. G. A. L.

Deane, Rev. G. Address of the Retiring President. *Ann. Rep. Birmingham Nat. Hist.* for 1874, pp. 3–29.

Discusses the various theories of volcanic energy and the internal condition of the globe.

Deville, Sainte-Claire C. Les travaux scientifiques de M. Elie de Beaumont. [The scientific work of M. Elie de Beaumont.] *Rev. Sci.* p. 265.

Consists chiefly of an exposition of the Pentagonal system.

Dorn, Prof. E. [Determinations of Temperature in the Soil at different Depths, at Königsberg.] *Schrift. phys.-ökon. Ges. Königsberg.*

Du Pré, Prof. Warren. On a series of Earthquakes in North Carolina, commencing on the 10th of February, 1874. *Ann. Rep. Smithson. Inst.* for 1874, pp. 254–260.

Describes phenomena attending a shock felt at Stone Mountain, suggests various hypotheses to account for them, and discusses the probability of the region becoming the seat of volcanic eruptions. In a note, the editor, **Prof. J. Henry**, suggests that, when districts are being depressed, the tension of the rocks would cause deep-seated cracks with attendant noises, whereas where the land is rising, these would be near the surface. G. A. L.

Dutton, C. E. A Criticism upon the Contractional Hypothesis. *Amer. Journ.* ser. 3, vol. viii. pp. 113–123 (1874).

Applies Fourier's theorem to calculate on various data the time of evolution of the present thermal condition of the earth, and the depth below which the increase of temperature must be inconsiderable. Concludes that there are no values consistent with probability which will support the contractional hypothesis. By far the greater part of the contraction must have taken place before the Tertiary epoch; yet the whole of it would not be enough to account for the disturbances which have occurred since the Cretaceous. Again, such distortion as that of the Laurentian rocks prohibits the belief that it is due to secular contraction of the interior. The localization of the folds could only have occurred by a horizontal sliding movement of the crust. The general contraction of the nucleus would be more likely to produce domes than anticlinals. With irregular corrugation by contraction, the earth would have failed to preserve as nearly as it does its ellipsoidal form. F. D.

Ebray, Th. Sur la théorie chimique des Volcans professée en 1800 par Patrin, et sur la négation du Feu central, thèse développée en 1852 par M. Dalmas. [Patrin's Chemical Theory of Volcanoes, and Dalmas' denial of Internal Fire.] 32 pp. *Geneva.*

Falb, Rud. Gedanken u. Studien über den Vulcanismus, m. besond. Beziehung auf das Erdbeben v. Belluno am 29. Juni 1873 u. die

Eruption d. Aetna am 29. Aug. 1874. [Thoughts and Studies on Vulcanism, with special relation to the Earthquake of Belluno on June 29, 1873, and the Eruption of Etna on Aug. 29, 1874.] Pp. xxiv. 320; 13 plates. 8vo. *Graz.*

Fisher, Rev. O. Mr. Mallet's Theory of Volcanic Energy tested. *Phil. Mag.* ser. 4, vol. l. pp. 302–319.

Objects to Mr. Mallet's paper that the cube of rock supposed to be crushed under great pressure cannot be extended laterally, and therefore Mr. Mallet's experiments do not prove what heat would be evolved. With respect to the "combined influence of friction and rock-crushing," maintains that though this *quantitatively* may be enough to account for the volcanic energy, *qualitatively* it is not: that is, it cannot be localized so as to produce the effects. Calculations are given to show that the amount of heat thus evolved on that part of the plane of shearing or friction where the heat is greatest is in small proportion to all the work done. Explains that instead of producing volcanic energy the work of descent of the crust is transformed into:—1, heat within the nucleus; 2, work of relative elevation of the crust; 3, heat within the crust. As an alternative explanation of volcanic phenomena, surmises that the earth's volume has diminished by the escape of steam, which in a superheated state conveys heat from below, and keeps lava melted. F. D.

—— Remarks upon Mr. Mallet's Theory of Volcanic Energy. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 469–478.

Takes up in succession the sections of Mr. Mallet's paper read before the Roy. Soc., agreeing with many and discussing some. Objects to the conclusion that the oceanic and continental areas have occupied nearly the same positions from the first—the marine origin of most strata, and the need of terrestrial conditions elsewhere for furnishing the detritus, pointing to an opposite conclusion. With regard to the main question, of the cause of volcanic heat, Mr. Fisher cannot see why the heat developed by rock-crushing should be localized, and therefore cannot allow the lateral pressure caused by the shrinking of the earth's crust to have been sufficient to fuse the rocks. F. D.

——. "Uniformity" and "Vulcanicity." *Geol. Mag.* dec. 2, vol. ii. pp. 97–99.

Objects to the doctrine of uniformity as understood by some authors, which is that the forces of nature act upon matter which has always been in the same condition as at present. Mr. Mallet's theory requires to be considered from his own point of view, and with the aid of mathematics. His critics have hardly touched the essence of the question. W. T.

Forbes, W. A. A Visit to Vesuvius. *Rep. Winchester Coll. Nat. Hist. Soc.* pp. 84–89.

A general account of the mountain.

Fuchs, Karl. Vulkane und Erdbeben. [Volcanoes and Earthquakes.] Pp. xii, 344; 1 plate (map). 8vo. *Leipzig.*

——. Ueber Gebirgsfaltungen. [Mountain-folds.] *Verh. k.-k. geol. Reichs.* pp. 196–198.

Remarks that no folds are symmetrical, but all thrust more to one side than to the other; the relation of this to the theory of mountain chains is alluded to. E. B. T.

——. Bericht über die vulkanischen Ereignisse des Jahres 1874. [Report on the Volcanic Phenomena of 1874.] *Min. Mitt.* Heft ii. pp. 57.

Notes on eruptions of Etna, Vesuvius, Stromboli, Ruwang, Foisi Yama, Mani, and Vulcano; 123 earthquake-shocks are recorded during the year, and arranged in chronological order. F. W. R.

Fuchs, T. Ueber secundäre Infiltration von kohlensauren Kalk in loses und poröses Gestein. [On secondary infiltration of calcic carbonate.] *Verh. k.-k. geol. Reichs.* pp. 198-201 (2 woodcuts).

Gives instances of alteration of beds in Sicily, Malta, &c. by subsequent infiltrations producing curious effects.

Greenwood, Col. G. Submerged Forests. *Geol. Mag.* dec. 2, vol. ii. pp. 239, 240.

Gives reasons why submerged forests do not prove submergence.

Halliday, I. G. Structure of Columnar Basalt. *Sci. Goss.* no. 125, pp. 116, 117.

Notices the alluvial nature of the soil of British Burmah, and the way in which it cracks by contraction into prismatic forms.

Herbst, Dr. G. Die Vulkane. Eine geologische Studie. [Volcanoes. A Geological Essay.] *Das Ausland,* pp. 145–150, 188–194.

Hull, Prof. E. The Volcanic Dust of Barbadoes, 1812. *Geol. Mag.* dec. 2, vol. ii. pp. 287, 288.

The dust fell after the eruption of the volcano of Le Souffrier, in St. Vincent, 100 miles distant. It is a brown impalpable powder. Under the microscope the grains appear to be the dust of sanidine, plagioclase, magnetite, and pyrites. W. T.

Jentzsch, Dr. —. [Oscillations of *Terra firma.*] *Schrift. phys.-ökon. Ges. Königsberg.*

Judd, John W. Contributions to the study of Volcanoes. *Geol. Mag.* dec. 2, vol. ii.

Introductory, pp. 1–4. Progress of the science of Vulcanology.

Lipari Islands, pp. 4–16, 56–70, map and woodcuts. The islands are described, and the distribution of the centres of eruption along three radiating lines of fissure demonstrated. An account is given of the rocks composing these islands.

Vulcano, pp. 99–115, plate and woodcuts. The history of this volcano is sketched, and an account of its eruption in 1874 given. The structure of the island and of the peninsula of Vulcanello is described, and its chemical products are noticed.

Stromboli, pp. 145–152, 206–214, plate and woodcut. Notices of the historical references to this volcano during the last 2000 years are followed by an account of what the author saw. The form, dimensions, and succession of phenomena of the volcano are discussed, these appearing to be inconsistent with Mr. Mallet's theory.

Ischia, pp. 245–257, map and woodcuts. An account is given of the volcanic rocks which compose the island, and of the succession of events which produced them. Thermal springs are also noticed.

Ponza Islands, pp. 298–308, woodcuts. A sketch of the structure of these islands and of their relations to the other volcanic regions of Italy is followed by an account of the numerous varieties of the trachytic and rhyolitic rocks found.

The Great Crater Lakes of Central Italy, pp. 348–356. The vast craters of Somma, Rocca Monfina, Monte Albano, the Lago Bracciano, and the Lago Bolsena are described, and proofs are adduced to show that their formation must be ascribed to explosive action. The distinction between volcanic mountains of great bulk, but with comparatively small craters, and those of slight elevation, but with enormous craters, is noticed, and the probable causes of the difference discussed. J. W. J.

Kinahan, G. H. Valleys and their relation to Fissures, Fractures, and Faults. Pp. xvi, 240; maps and sections. 8vo. *London.*

Herein are given descriptions of the growth of joints, fractures, faults, and fissures; also of their relations to one another. Subsequently are described the relations between such ruptures in the rock and the features of the earth's surface. The object of the book is to prove that the sculpturing of the earth's surface is largely due to, or induced by, the shrinkage, breakage, and displacement of the rocks forming the crust of the earth. G. H. K.

——. Mr. Croll on the Oscillations of the Sea-level due to the advance and retreat of the Ice-Cap. *Geol. Mag.* dec. 2, vol. ii. pp. 141.

Besides the oscillations of the sea-level, there have been oscillations of the land, as proved by the varying heights of the Eskars and by the faults in the Drift. W. T.

——. Faults and Features of the Earth. *Nature*, vol. xii. p. 146.

Referring to the fault between the Highlands and Lowlands of Scotland, and to the statement that it does not coincide with a line of valley, the author remarks that where fault rock is hard there is no tendency to produce valleys along the line of fault; also that the features of old faults, such as this, may be obliterated by later geological changes. W. T.

——. Slaty Cleavage. *Sci. Goss.* no. 126, pp. 137, 138.

Note in answer to Mr. Malet, stating the difficulties of the subject.

King, Prof. William. Report on the Superinduced Divisional

Structure of Rocks, called Jointing; and its Relation to Slaty Cleavage. *Trans. R. Irish Acad.* vol. xxv. (Science), pp. 605–662; 4 plates.

Considers that many cases of so-called slaty cleavage should in reality be referred to jointing. There appears to be a relation between jointing and mineral cleavage, which is also a superinduced divisional structure; and the author does not accept the mechanical theory of the origin of the former. He points out a remarkable agreement between jointing and a phenomenon of terrestrial magnetism, and thinks it possible to imagine that, conditions being favourable, jointings induced at any given period might coincide in direction with the magnetic meridian of that time. E. T. H.

Mackintosh, D. On the Origin of Slickensides, with Remarks on Specimens from the Cambrian, Silurian, Carboniferous, and Triassic Formations. (Abstract.) *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 386, 387.

Suggests that slickensides may be due to partial fusion during the movement of one face of rock against the other.

Malet, H. P. Basalt. *Sci. Goss.* no. 124, pp. 90, 91.

A short note against the igneous origin of Basalt.

——. Cleavage of Slate. *Sci. Gos.* no. 125, p. 119.

Mallet, R. Some Observations on the Rev. O. Fisher's Remarks on Mr. Mallet's Theory of Volcanic Energy. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 511–518.

See the following notice.

——. On the Temperature attainable by Rock-crushing and its Consequences. *Phil. Mag.* ser. 4, vol. l. pp. 1–13; reprinted in *Amer. Journ.* ser. 3, vol. x. pp. 256–268.

In answer to Prof. Hilgard's and Rev. O. Fisher's criticisms on his Theory of Volcanic Energy, the author explains in what way the temperatures consequent upon crushing the materials of the earth's crust may be sufficient locally to bring these into fusion. A cube of rock deep within a mass of similar rock will require a much greater force to crush it than when exposed to pressure on two surfaces only (as in the experiments), and the work done and heat produced will be proportionally greater. At 20 miles depth, with an initial temperature of 1000° Fahr., the heat developed by the work of crushing each cubic foot of rock will fuse its own volume. To Mr. Fisher's objection that he sees no reason why the heat developed by the crushing of 10 cubic miles of rock should be localized so as to fuse 1 cubic mile, the author argues that when a column of rock is pressed against an unyielding mass, crushing will commence at the weakest place if it be not homogeneous, and if it be so will commence where the column is in contact with a fixed mass. The subsequent effects are, that the extremity of the column is continually crushed by a succession of movements, and that the crushed fragments are surrounded by materials of a higher and higher temperature, the first portion having the minimum temperature of crushing, the latter ones taking up heat from that crushed material, and so on. Heat must also be transformed from the work of subsequent friction. Time also must be taken into account; the shorter the time, the less heat is dissipated; the velocity of crushing would be extremely great when a rock-mass of great length is being compressed. Another source of heat is the forcing of the fragments that have become viscous through constricted rock-channels of the heated mass. F. D.

Mallet, R. On the Origin and Mechanism of Production of the Prismatic (or columnar) Structure of Basalt. *Phil. Mag.* ser. 4, vol. l. pp. 122–135, 201–226; *Amer. Journ.* ser. 3, vol. ix. pp. 206–211. (Abstract.)

Supposing a homogeneous isotropic mass of basalt resting on a horizontal floor and cooling from the upper surface, why should the fissures take the hexagonal form? The answer is to be found in the 'principle of least action.' A smaller amount of work is required for a contracting surface to split into hexagons than into the other two forms (equilateral triangle and square) by which a plane can be divided into equal and similar figures. It is inferred that the splitting temperature of cooling basalt is somewhere between 900° and 600° F. When the contraction due to a lower temperature exceeds the amount of extension (of the still slightly viscous material), rupture takes place; and the splitting will proceed downwards *pari passu* with the cooling, the rate being much increased by the probable presence of water. Then, the outside of each prism becoming cooled more than the interior, differential strains will be set up, causing transverse fracture. The distance of the first transverse joint from the cooling surface cannot be less than the diameter of the prisms. The curved form of the transverse joints is shown to result from the simultaneous contraction in an axial and a transverse direction, the resultant strain being along a line inclined to the axis; but this inclination diminishes as the cross fracture proceeds inwards (the width of the remaining contracting material being less); and so a cup-shaped surface of fracture is made, *the convexity pointing away from the cooling surface.* The breaking off of the corners of the hexagonal prisms is also accounted for. The author describes the variations from the theoretical form of the jointed prisms that occur under actual conditions of basalt masses, and concludes by combating the theory that the columns were formed by a union of spheroids, maintaining rather that the latter result from the decomposition of basalt in spheroidal surfaces of weakness induced by the occurrence of the joints in the forms described. F. D.

——. On Prismatic Basalt. *Nature*, vol. xiii. p. 7.

In answer to a paper by Mr. Scrope (*Geol. Mag.* 1874), says that the double-concave articulation of the basalt columns in the Geol. Society's hall came from some portion of the mass in which occurred the dividing plane between what was cooled from the top and what was cooled from the bottom. Irregularities in the direction of the convexity may occur a little above or below this plane, from differences in conductivity, &c. The heat-waves may become irregular from various causes; there would follow from this alternations in the direction of concave and convex surfaces. F. D.

Mallet, R. The Mechanism of Stromboli. *Geol. Mag.* dec. ii. vol. ii. p. 286.

Remarks that what the level of the bottom of the crater may be is immaterial to the validity of his theory (see **Judd**, p. 174).

Mohr, Prof. —. Ueber die Ursache der Erdwärme. *N. Jahrb.* pp. 371–377.

Discusses the observations of underground temperature made in a bore-hole at Speremberg, 5½ miles S. of Berlin, carried to a depth of 4042 feet. The rate at which the temperature increases lessens with the depth, the increase of temperature for any 200 feet being 0°·05 R. less than for the 200 feet immediately above. If this law held good for all depths, the temperature would cease to increase beyond a depth of 5170 feet. Argues from these facts that the heat of the crust cannot come from the interior, but must be generated in the superficial portion by chemical action and similar causes. A. H. G.

Neumayr, Dr. M. Die Aralo-Kaspi-Niederung. [The Aralo-Caspian Depression.] *Verh. k.-k. geol. Reichs.* Bd. xxv. pp. 31–33.

Controverts Prof. Schmick's views as to oscillation of sea-level and recurring periods of warmth as applied to this locality.

Noak, F. W. Ueber die Bildung der Continente. [Formation of Continents.] *N. Jahrb.* Heft ix. pp. 897–925; 2 woodcuts.

In seeking to explain the present distribution of land and sea, goes back to the period of igneous fluidity, and discusses the effects of strains upon the solidifying crust. The pressures were due partly to contraction on cooling, partly to a tidal wave in the interior. A narrow-meshed network of cracks first formed; then fissures filled with ejected matter, which re-cemented the fractures; a new system of cracks would afterwards be formed, but as the crust became stronger the fissures were fewer and further apart, till at length a colossal line of fracture would encircle the earth. Illustrates his theory by seeking to explain, by means of diagrams, the formation of the American continent. Before dry land appeared in the American area, a great meridional cleft was formed; the tidal wave in the interior passing from E. to W. forced molten matter into this crack, which closed and re-opened, and trachytic ejecta formed the nucleus of the Andes and Rocky Mountains. By the action of the wave from E. to W., a large tract of country was ultimately raised above water E. of the back-bone of the continent, but none on the W., as pressure was relieved by eruptions. Three principal lines of volcanic activity are traced:—1, Old World; 2, America; 3, Pacific system. The author supports his theory by reference to ancient myths. F. W. R.

Parton, T. Disturbing forces underground. *S. Staff. & E. Worcester. Inst. Min. Eng.*

Pfaff, —. [Expansion of Rocks by Heat.] *Zeitsch. deutsch. geol. Ges.* t. xxxiv. p. 401.

Roberts, W. C. On the Columnar Form of Basalt. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 91, 92; *Coll. Guard.* vol. xxviii. p. 392 (1874).

Describes experiments on the effect of heat on bricks. When heated to redness they contract from 3 to 4 p. c.; and the unequal strain attending this produces a columnar structure, much like that of certain basalts. W. T.

Roth, J. Ueber die neue Theorie des Vulkanismus des Herrn R. Mallet. [On Mallet's new Theory of Vulcanism.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 550–573.

A critical examination of Mallet's paper in the *Phil. Trans.* Brings forward numerous objections to the theory, which he regards as insufficient and unnecessary. F. W. R.

Schmidt, Dr. J. F. J. Studien über Erdbeben. [Studies on Earthquakes.] 330 pp., 6 plates. *Leipzig.*

Schott, Ch. A. On Underground Temperature. *Ann. Rep. Smithson. Inst.* for 1874, pp. 249–253.

Brief *résumé* of the present state of inquiry on the subject. Gives results of experiments at Brussels, Edinburgh, and Chicago. Quotes largely from Prof. J. D. Everett's paper [see GEOLOGICAL RECORD for 1874, p. 163], and concludes with a short list of authorities to be consulted. G. A. L.

Scrope, G. P. Notes on the Volcanic Eruptions of Iceland. *Geol. Mag.* dec. ii. vol. ii. pp. 289–291.

Reprints (from the *Scotsman* of May 21) an account of an eruption, comments on the facts stated, and gives a summary of the phenomena. One eruption is said to have produced no ashes: this statement Mr. Scrope regards as incorrect; he believes that the ashes were carried by the wind away from the observers. Ashes of some of the eruptions were carried as far as Sweden. W. T.

——. Cup-shaped joints in Basalt. *Nature*, vol. xiii. p. 47.

In reply to Mr. Mallet, states that one of the three columns in the hall of the Geol. Soc. exhibits an articulation in the shape of a double-concave lens. The articulation is 3 or 4 inches thick, and shows no evidence of a plane of separation, as suggested by Mr. Mallet. C. E. DE R.

Shaler, N. S. Notes on some of the Phenomena of Elevation and Subsidence of the Continents. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 288–292.

Believes that some amount of the apparent elevation and depression of the land is due to absolute change of sea-level. The following causes might produce such change:—movements of the sea-floor; accumulations on the sea-bottom; abstraction of water to form ice-sheets; change in position of the fulcrum-line of oscillations of level; transfer of weight to the land by the accumulation of an ice-sheet. F. D.

——. Recent Changes of Level on the Coast of Maine, with reference to their origin and relation to other similar changes. *Mem. Bost. Soc. Nat. Hist.* vol. ii. pp. 322–341.

Silvestri, Prof. The Eruption of Etna on the 29th August, 1874. *Phil. Mag.* ser. 4, vol. xlix. pp. 126–134. See also *N. Jahrb.* Heft i. pp. 36–42.

Translated from a pamphlet published in Catania. The account in Italian is noticed in the GEOLOGICAL RECORD for 1874, p. 169.

Thomson, Sir W. Underground Temperature. *Coll. Guard.* vol. xxix. p. 311.

Abstract of Address at the Annual Meeting of the Geol. Soc., Glasgow.

Ward, J. C. Modern Vulcanicity. *Geol. Mag.* dec. ii. vol. ii. pp. 38–41.

Criticises the theory of Mr. Mallet, who regards the volcanic forces and movements of upheaval and depression of early geological periods as more intense than those of recent date, and holds that the early volcanic phenomena were not 'explosive.' The author believes, from a study of the volcanic rocks of Wales and the Lake District, that these views are incorrect; he shows that the upheaval of the Cumberland mountains occupied an immense time—the length of the Old Red Sandstone period—represented by the denudation of 26,000 feet of beds. W. T.

Ward, Dr. Ogier. On Slickensides or Rock-striations, particularly those of the Chalk. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 113, 114.

Believes all slickensides to have been caused by motion.

Williamson, Prof. W. C. Earthquakes and Volcanoes. *Science Lectures for the People.* 6th ser. pp. 220–236. 8vo. *Manchester.*

Willis, John. Internal Heat of the Earth. *Nature*, vol. xiii. p. 8.

Discusses Prof. Mohr's observations on the internal heat of the earth (see p. 177).

Woodward, C. J. On an Apparatus to illustrate the Formation of Volcanic Cones. *Phil. Mag.* ser. 4, vol. l. pp. 52–3.

A simple apparatus of a trough, with a bladed screw to carry forward material, and a bellows to eject it through a hole in a board laid above, will produce cones, illustrating many volcanic phenomena in a way suited to the lecture-room. F. D.

See also :—

Clark, D. R. Underground Temperature, St. Gothard Tunnel: p. 199.

Doelter, Dr. C. Volcanic Group of the Ponza Islands: p. 59.

Hunt, Dr. T. S. Chemical and Geological Essays: *post*, under MISCELLANEOUS and GENERAL.

Suess, Prof. E. Origin of the Alps: p. 101.

2. *DENUDATION; GLACIAL PHENOMENA.*

Anon. The Solid Land. *Iron*, vol. vi. p. 739.

Note on changes of the coast-line.

Belt, T. Niagara: Glacial and Post-Glacial Phenomena. *Quart. Journ. Sci.* n. s. vol. v. pp. 135–156.

Gives the results of his examination of the glacial phenomena of the Niagara gorge, and concludes that the greater part of the gorge was cut out *before* the glacial period, which therefore need not have ceased so long ago as the opposite conclusion would have implied. F. D.

Bonney, Rev. T. G. Glacial Erosion. *Geol. Mag.* dec. ii. vol. ii. pp. 426–428.

States objections to certain theories on glacial erosion, on the ground of observations made in various parts of Europe. Considers that the regularity of form of certain valley-sides, and the disproportion between the size of the valley and the stream that flows through it, may be accounted for by subaerial denudation alone, because similar features occur where it is supposed that there has been no ice-sheet at all. Thinks we should find more glacial markings on high ground if the erosive power of ice is as great as some suppose. J. G. G.

Boué, Dr. A. Ueber die Methode in der Auseinandersetzung geologischer Theorien und über die Eiszeit. [The Glacial Theory, &c.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1. Bd. lxxi. pp. 199–207.

Notes on prevalent geological theories, uniformitarianism, &c. The author does not believe in glaciation of the tropics; he gives part of a list of 400 papers on the glacial epoch.

——. Einiges zur palæogeologischen Geographie. [Past Configuration of Earth-surface.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1. Bd. lxxi. pp. 305–425.

A review of changes in the form of oceans, continents, lakes, mountain ranges, &c. throughout the world, with many references to authorities. Under the first head great influence is ascribed to marine currents when the isthmus of Panama was open. E. B. T.

——. Einige Bemerkungen über das Alluvialgebiet. [Alluvium, &c.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1. Bd. lxxii. pp. 100–122.

A review of facts and opinions relating to various forms of alluvium, loess, glacial drifts, &c.; also to the formation of valleys, particularly narrow river-gorges, parallel roads, &c., and to other events which have taken place in alluvial times. E. B. T.

Braun, Alexander. The Glacial Epoch of our Globe. In vol. i. of "Half-hour Recreations in Natural History" of Estes and Laureat. *Boston.*

Brown, Dr. R. The Arctic Expedition: its Scientific Aims. *Pop. Sci. Rev.* vol. xiv. pp. 154–163.

Notices the chief geological questions upon which light may be thrown by the expedition.

Carpenter, Dr. W. B. On the Glacial Epoch. *Coll. Guard.* vol. xxix. p. 59.

Abstract of Swiney Lecture, delivered Jan. 1, 1875.

Dakyns, J. R. The Sediment Theory of Drift. *Geol. Mag.* dec. ii. vol. ii. pp. 168–172.

Remarks that Mr. Goodchild's theory explains how the glaciers which scored the rocks also carried and afterwards deposited the débris forming the Boulder Clay; but it is difficult to understand whence the stones were derived if the whole country were covered with ice. The sediment theory does not explain why drift is sometimes local in its distribution, nor the occurrence of wide-spread deposits of stratified sand and gravel with an overlying Boulder Clay; nor, again, the difference between Eskars and the Middle Sands; for according to the theory both are formed in the same way. The stones in the drift of the Yorkshire dales are all local. The ice seems to have radiated from Bar Fell; but the summit of this fell is grooved; and as this cannot have been done by ice at the point of radiation, it probably points to submergence to this amount (2200 feet) and the action of icebergs. Refers to Mr. Goodchild's theory of cross-currents in the ice, and suggests that the application of this idea involves the fallacy of perpetual motion. W. T.

D[ana], J. D. Notice of Mr. Croll's paper 'on the Submergence during the Glacial period.' *Amer. Journ.* ser. 3, vol. ix. pp. 315, 316.

Notes that "the facts from Eastern North America do not appear to favour Mr. Croll's conclusions." G. A. L.

——. Notice of Mr. Belt's paper entitled 'An examination of the Theories that have been proposed to account for the Climate of the Glacial Period.' *Amer. Journ.* ser. 3, vol. ix. pp. 313–315.

Criticises Mr. Belt's theory of the lowering of the sea-level to the extent of 2000 feet. The Atlantic border shows no evidence of this. Notes that Mr. Belt has not included among possible sources of cold the exclusion of the Gulf Stream from the Arctic regions by a rise of the land there. G. A. L.

Dawson, Principal J. W. Marine Boulder Clay, and other Deposits. *Nature*, vol. xi. p. 306.

The 'Challenger' observations show that the deposition of mud and sand with stones dropped by floating ice is now going on so rapidly in the Southern Ocean, as to obliterate all traces of organic slime, and that in certain deep-water areas the excess of carbonic acid may remove the remains of calcareous organisms. Believes the Boulder Clays of N. America to have had a similar origin. C. E. R.

Ekman, F. L. Om de strömningar som uppstå i närheten af flodmynningar: ett bidrag till kännedomen om hafs-strömmarnes natur. [Currents in the neighbourhood of river-mouths: a contribution to the knowledge of the nature of the currents in the sea.] *Œfvers. k. Svenska Vet. Akad. Förhandl.* no. 7, pp. 43–134, with a hydrographical map.

Gaudard, Jules. Notes on the Consolidation of Earthworks. Translated from the French by **Jas. Dredge.** *Proc. Inst. Civ. Eng.* vol. xxxix. pp. 218–247; 44 woodcuts.

Notes the influence of springs, decomposition of iron-pyrites, frost, &c. The Physical Causes of Landslips described on pp. 223–227.

Gilbert, G. R. Wind-drift Erosion. *Amer. Journ.* ser. 3, vol. ix. pp. 151, 152.

Note claiming priority of observation of the effects of erosion by sand in the Western Territories for Prof. W. P. Blake, 1855. G. A. L.

Goodchild, J. G. Glacial Erosion. *Geol. Mag.* dec. ii. vol. ii. pp. 323–328, 356–362.

Gives reasons for concluding that the varying rates of destructibility of the Carboniferous rocks in the Yorkshire Dales, under ordinary subaërial conditions, would give rise to minor details of surface configuration different from those that would be left after long exposure to the abrading action of ice. Considers that, as some of the more prominent features consist of rocks that are least able to withstand the attacks of subaërial erosion, and are at the same time most capable of resisting erosion by mechanical means, they must be due to the modification of a preglacially weathered surface by the long-continued erosion of the ice-sheet. J. G. G.

——. On the Origin of Coums. *Geol. Mag.* dec. ii. vol. ii. pp. 486, 487.

Assuming that certain terraces in the Yorkshire Dales have had a glacial origin, points out that the transition in form from these to semicircular recesses like cirques and corries leads to the belief that these recesses have had a glacial origin also. Their resemblance in form and position to the concavities formed by streams under like circumstances points to a similarity of origin; and the author concludes that, as the analogy between the laws of motion of a glacier and that of a river has been proved to be almost complete, under the extreme conditions that obtained during the Ice-sheet period the analogy was complete in every respect, and that the coums or cirques are really gigantic potholes produced by the slow but long-continued eddying of the ice-sheet.

J. G. G.

Greenwood, Col. G. Mr. Bonney on Glacial Erosion. *Geol. Mag.* dec. ii. vol. ii. p. 524.

Agrees with Mr. Bonney (see p. 180) that the formation of natural features should be attributed more to the action of subaërial causes than to the erosive action of ice. J. G. G.

Hardman, E. T. Note on Mr. Goodchild's Theory of the Sub-Glacial Formation of Gravels, etc. *Geol. Mag.* dec. ii. vol. ii. pp. 172–175.

The theory in question fails to explain the gravels and sands of the N. of Ireland. The Boulder Clay there always contains a large percentage of local rocks, with but little chalk or flint. The stratified sands and gravels overlying the till contain a large proportion of chalk and flint. If the gravels are merely the Boulder Clay minus the Clay, why should the chalk *débris* become concentrated by washing? Thinks that the Boulder Clay is glacial. The gravels are marine, formed by the washings of the clay and the marine denudation of chalk-cliffs. W. T.

Harrison, Mann. On the Origin of Eskers. *Proc. Belfast Field Club*, ser. 2, vol. i. pt. ii. pp. 100–108.

Describes Boulder Clay, glacial striæ, and transported blocks. At the close of the Glacial period, subsidence occurred, during which the Boulder Clay was denuded and converted into stratified deposits. On re-elevation, lacustrine beds were formed (that of Strangford Lough is described). A second subsidence led to the formation of Eskers (by denudation) out of the first-named stratified deposits. W. H. D.

Hartley, Sir C. A. Description of the Delta of the Danube, and of the works recently executed at the Sulina Mouth. *Proc. Inst. Civ. Eng.* vol. xxxvi. 1873–74; 4 large plates.

Helland, A. Om Botner og Saekkedale, samt deres Betydning for Theorier om Dalenes Dannelser. [Coombes with their relation to theories of Valley-formation.] 1 Plate. *Geol. Fören. Stockholm Förhandl.* Band ii.

Coombes are divided into two kinds:—1. Those lateral to or apparently isolated from large valleys (Botner); 2. Those closing the upper end of valleys (Saekkedale). Bonney's theory of their origin by a conjunction of waterfalls is rejected, most of those described being inaccessible even to streamlets. In support of the origin of Botner by small outlying glaciers of a very recent period, the following facts are adduced:—They mostly have a northern exposure (this is fully established by a table). Their position varies in snow-countries with the snowline. The ice of a small coombe debouching in the face of a vertical cliff piled at its base nearly the equivalent of the coombe's contents. Saekkedale are larger and are dated from the Glacial period. They are thought to prove the glacial origin of the valleys which they terminate. An important suggestion (by Loranges) is that the freezing and thawing of water percolating from the glacier into the rock is the chief agent in dislodging fragments. H. M.

——. Om Beliggenheden af Moræner og Terasser foran mange Indsöer. [Existence of Moraines and Terraces in front of many lakes]. *Œfvers. K. Svenska Vet.-Akad. Förhandl.* no. 1, pp. 53–83, with a plate.

Gives examples from Norway of lakes that at their lower ends are confined by moraines, and concludes that they owe their origin to glacial erosion. E. E.

Helland, A. Om Dannelsen af Fjordene, Fjorddalene, Indsöerne og Havbankerne. [Origin of Fjords, Fjordvalleys, Lakes and Sea-banks.] *Œfvers. K. Svenska Vet.-Akad. Förhandl.* no. 4, pp. 13–38.

Facts are given showing that the fjords and lakes have been excavated by ice. On the western shores of Norway there are many fjords; these are deeper in the middle part of their length than at their mouths, where they are traversed by old moraines. The fjords on the western coast of Scotland are also less deep at their mouths, and would, as those of Norway and Greenland, be transformed by a rise of the land to large lakes with great masses of glacial boulders and gravel at their ends, as can be seen in several lakes in Norway, in Lago Maggiore and other lakes south of the Alps, and in other countries whose latest geological history has been the same as that of the above-named countries. E. E.

——. Oversigt over den engelske Litteratur om Fjordenes, Fjorddalenes og Indsöernes Dannelse. [Review of the English Literature regarding the origin of Fjords, Fjordvalleys, and Lakes.] *Tidstavler.* 8vo. *Christiania.* 28 pp.

Hull, Prof. Edward. On Glaciers, Ancient and Modern. *Journ. R. Dublin Soc.* vol. vi. pt. 43, p. 450.

Describes the researches of Agassiz and Forbes, and reviews generally the question of ancient glaciation, especially with reference to the British Islands. E. T. H.

Hunt, R. The Ice Age.—Climate and Time. *Pop. Sci. Rev.* vol. xiv. pp. 234–244.

Gives a summary of the evidence for a glacial period; discusses the theories which have been advanced to explain the recurrence of cold periods, referring especially to changes in the eccentricity of the earth's orbit, and to deflection of oceanic currents. W. T.

Hunt, [Dr.] T. S. The Disintegration of Rocks, and its Geological Significance. *Amer. Nat.* vol. ix. pp. 471–473. (Amer. Assoc.)

Kinahan, G. H. Åsar, Esker, or Kaims. *Geol. Mag.* dec. ii. vol. ii. pp. 86, 87.

Objects to the view that Eskers were accumulated as marginal fringes to the retiring ice-cap, and believes that most of them are due to the irregular heaping up of material consequent upon the meeting of currents in a tidal sea. J. G. G.

Kinkelin, Fr. Ueber die Eiszeit. [The Ice Age.] *Ber. Senckenb. nat. Ges.* 1874–75, p. 77.

Koch, Dr. G. A. Ueber Murbrüche in Tyrol. [Torrent Inundations.]

Jahrb. k.-k. geol. Reichs. Bd. xxv. Heft 1, pp. 97–128; 2 woodcuts.

"Muren" and "Rüfen" are local names given to the débâcles of water, mud, and rock masses, which occur, chiefly in consequence of the cutting down of forests, in the Alps. Their effects are described, the causes shown, and remedial precautions laid down. E. B. T.

Lebour, G. A. The Geological Aspects of Rock-work. A chapter (10 pp.; woodcuts) in *Robinson's* "Alpine Plants." Ed. 2. *London.*

A sketch on the natural weathering of rocks.

Mackintosh, D. Questions concerning the Geological Action of Ice. *Geol. Mag.* dec. 2, vol. ii. pp. 191, 192.

Believes that until we know more about the behaviour of ice in Greenland we shall not be able to understand the glacial phenomena of these Isles. Addresses a series of questions to the officers of the Arctic Expedition, calling attention to those points that most require investigation. J. G. G.

——. Origin of Escarpments and Cwms. *Geol. Mag.* dec. ii. vol. ii. pp. 569, 570.

Points out that the substance of many of the arguments lately advanced by Messrs. Kinahan and Goodchild had been published by him some years ago. J. G. G.

Martin, Charles. Recherches Récentes sur les Glaciers actuels et la Période Glaciaire. [Existing Glaciers and the Glacial Epoch.] *Revue des deux Mondes*, Apr. 15, p. 26.

Points out that the line of perpetual snow is really the line of névé, and that this is too dependent on local conditions to be the subject of calculation. Describes some recent variations of Alpine glaciers, also their effect in condensing the moisture of the neighbouring atmosphere: the glacier of the Rhone condenses 3450 cubic metres of water an hour. Sketches the former extent of the Alpine glaciers. Discusses a discovery of marine shells in a moraine at Camerlata (Como); speaks of glacial action in Auvergne. Remarks on interglacial periods and the Glacial Drifts of Britain. Concludes by discussing evidence for man's existence in the Glacial period. T. G. B.

Nordenskiöld, Prof. A. E. On the Former Climate of the Polar Regions. *Geol. Mag.* dec. ii. vol. ii. pp. 525–532.

From the absence of traces of glacial conditions throughout the clear sections of all the rocks, from the Silurian to the Miocene, that have been examined in the Polar Regions, and from the indication of temperate (or even of warm) climates afforded by the general character of the fossils from nearly all these rocks, concludes that Geology and Palæontology alike lend no support to the assumption that before the Glacial Period there were periodical alternations of warm and cold climates on the surface of the earth. J. G. G.

Prestwich, Prof. Joseph. On the Origin of the Chesil Bank, and on the Relation of the existing Beaches to past Geological Changes independent of the present Coast Action. *Proc. Inst. Civ. Eng.* vol. xl. pp. 61–79; Discussion, pp. 80–114, map and sections.

The general opinion is that the pebbles forming the Chesil Bank have been derived from rocks to the west, and that they have travelled up the Channel along the existing coast to their present position. The author contends that this is not the case, and endeavours to show that the prevailing winds could not transport the shingle in the direction required. He then draws attention to the raised beach at Portland Bill, and gives reasons for believing that this is but a remnant of a line of shingle which once stretched across Lyme Bay, from Hopes Nose to Portland Bill. Other traces of this old beach are still to be found on the bed of the sea. This old beach was derived by ordinary coast action from rocks to the west. Since the beach occupied this position the land has been denuded; and the existing beach is formed of pebbles of the old beach thrown up by the waves. The author believes that such travelling of shingle as takes place on the bank is from S.E. to N.W., the smaller pebbles at the N.W. end having travelled furthest. The sea passed for a time between Portland and Weymouth; and the Fleet is merely a portion of the old shore-line dammed by the growth of the Chesil Bank. In the discussion there is much information as to the movement of the shingle on other parts of the English coast. W. T.

Probst, —. Erörterungen über den Zusammenhang der climatischen Zustände der letzten drei Erdperioden. [Climate of the three last Geological Periods.] *Jahresheft Ver. Nat. Württ.* Bd. xxxi. p. 85.

Reade, T. M. Wind Denudation.—Eolites. *Geol. Mag.* dec. ii. vol. ii. pp. 587, 588.

Describes the denudation of sand by wind at Blundellsands. Pieces of shell, &c. protect the sand; and the parts so protected stand out like small earth pillars. W. T.

——. Speculation on the probable Distribution of Land and Sea during the Deposition of the Marine Boulder Clay and Sands. *Proc. Liverpool Geol. Soc.* vol. iii. part i. pp. 35–52.

Explains the presence of the southern forms *Venus chione*, *Cardium rusticum*, *C. aculeatum*, and *Arca lactea*, associated with the Arctic forms in the Lancashire Drifts, as evidence of the extremes of cold and heat peculiar to a low latitude under glacial conditions. The American representatives of the Lusitanian Province intermingle with the Arctic forms at Cape Cod in lat. 42°, or 11° further S. than Liverpool. Arctic currents cause the whole of Labrador to be within the area of permanent ground frost, and produce a mean deficit of 13° of annual temperature over the normal climate due to the latitude. The author thinks that the Bridlington Beds are older and indicate more glacial conditions than do those of Lancashire and the Clyde; and further believes that while the E. coast of Britain was first submerged beneath the glacial sea, the W. coast was still subaërial, and that there is a break in time between the period of the rock-grooving and the deposition of the overlying marine clays. C. E. De R.

Reusch, H. H. En notis til Kundskaben om Strandlinjer. [Note on Coastlines.] *Forh. Vid.-Selsk. Christiana* for 1874, pp. 284, 285.

Ricketts, Dr. C. The Cause of the Glacial Period, with Reference to the British Isles. *Geol. Mag.* dec. ii. vol. ii. pp. 573–580 ; and *Proc. Liverpool Geol. Soc.* vol. iii. pt. 1, pp. 49–52.

The alternations of mild and very low temperature during the Glacial Period have been thought to be indirectly due to astronomical causes; but the author thinks that a series of oscillations of level in Central America, whereby the Gulf Stream would be from time to time diverted, would give rise to the same phenomena, and might at the same time afford an explanation of the occurrence of Boreal shells in Tertiary deposits. J. G. G.

Rogers, J. J. Remarkable Sea-waves observed in Mount's Bay, Cornwall, April 24th, 1868. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 74–77.

Although the wind was off shore, the sea was violently agitated for some hours on the coast near Helston. There was a succession of great waves differing from ordinary waves by their size and the distance inland to which they penetrated. Much damage was done to the coast, the sea-waves eroding the soft earth at points rarely touched. The author supposes that recent encroachments of the sea near Porthleven must be attributed to a subsidence of Mount's Bay. C. L. N. F.

Sexe, S. A. Angaaende Jættegryders opkomat. [Origin of Giant's Kettles.] Extract from an unprinted paper by **Capt. L. Adlerstam.** *Forh. Vid. Selsk. Christiania* for 1874, pp. 187–189.

Shaler, Prof. N. S. Some Considerations on the possible means whereby a Warm Climate may be produced within the Arctic Circle. *Proc. Boston Nat. Hist. Soc.* xvii. pp. 332–337.

To solve the question raised by the occurrence of fossil forest-vegetation about the N. Pole, the author imagines an easier access for warm equatorial currents to the Arctic Regions, especially that the Japan current was enabled to flow over what is now the land about Behring's Strait. The admission to the Arctic Regions of another current equal to the Gulf Stream would make the temperature nearly equal to that of the Ohio Valley. The subsidence is supposed to have occurred during the glacial period, and to have taken effect at its close. The bearing of the theory on the changes in Greenland and Iceland within the historical period is also discussed. F. D.

——. Notes on some points connected with Tidal Erosion. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 465, 466.

The erosive action of tidal waves is greatest where, as in the Bay of Fundy, there is a wedge-shaped arrangement of the shores, and a closure at the far end. As soon as a passage is worn open to another sea, the extraordinary rise and fall and the great erosion will cease. Tides tend to produce deep inlets, and ultimately channels and islands; thus their effects may closely simulate the forms of shore given by glacial action. F. D.

Shaler, Prof. N. S. Propositions concerning the Motion of Continental Glaciers. *Proc. Boston Nat. Hist. Soc.* vol. xviii. pp. 126–133 (pp. 129–133 were published in 1876).

Convinced that N. America, N. of the parallel of 40°, was covered by a deep mass of ice during the last glacial period, the author does not believe that there was a continuous movement of its substance outwards, and endeavours otherwise to account for the transport of material. Starting from Mr. J. Thompson's conclusion that for each atmosphere of pressure the freezing point of water is lowered 0°·0075 Cent., it is argued that the bottom-ice would melt where the ice-sheet was thicker; the water thus produced would not escape upwards, because as it rose the relief of pressure would cause it to freeze again, but would be forced out to where the ice was thinner. There would be a continual alteration of volumes and pressures in the parts of the mass, tending to a frequent melting and freezing. By the escape, sometimes sudden, of the water thus accumulated transportation of material was effected, much of that which makes the American moraines being water-worn. Glacial basins would be thus formed:—In any hollow there would be much water and falling-in of ice, with movement of water with sand, pebbles, &c., and consequent erosion, the intensity of this action increasing as the hollow deepened, and the only limit being when a pit in the ice-surface immediately above the basin began to form. The basins would be elongated in the direction of the line from the supply-point to the border of the sheet, since that would be the direction of the outflow of the water. The theory is thus applied to the case of the great lakes. The striæ are accounted for by supposing a true forward motion of the ice near the edge of the ice-sheet, the whole region being in turn scratched on the retreat of the ice. F. D.

Topley, W. Sand-Dunes and Blowing Sand. *Pop. Sci. Rev.* vol. xiv. pp. 133–142.

Describes the mode of formation of sand dunes, and notes the chief accumulations of blown sand around the English Coast. The sands of the Atlantic Coast of Western Europe are described, especially the Landes; then some of the sands of the Mediterranean, and those of the Sahara. The stores of water beneath the Sahara are mentioned, and the erosive action of blowing sand is described. W. T.

Tylor, A. On the Action and Formation of Rivers, Lakes, and Streams, with remarks on Denudation and the Causes of the great Changes of Climate which occurred just prior to the Historical Period. *Geol. Mag.* dec. ii. vol. ii. pp. 433–476, 35 woodcuts.

The friction of ice upon ice during the motion of a glacier produces water; this water in freezing helps to excavate rock-basins; but the main agent is moving ice holding boulders in its grasp. The second part of the paper enters into detail as regards the denuding action of rivers, the shape of the river-bed, &c. The author estimated, from the amount of sediment in river-water, that the whole land of the globe was lowered 1 foot in 9000 years; but by including the amount of siliceous matter *pushed* along the bed, the time required for denuding 1 foot is reduced to 2000 years. In 1872 the author pointed out that the transverse valleys of the Weald run in synclinals; this point is further dwelt upon. W. T.

Woodward, Henry. Geologists' Association: Address at the opening of the Session 1874-75. *Proc. Geol. Assoc.* vol. iv. no. 1, pp. 1-34.

Deals mainly with Mr. Belt's theory that the cause of the cold of the Glacial Epoch was a change in the obliquity of the Ecliptic.

See also:—

Brown, Dr. R. Greenland, Ice, &c.: p. 109.

Cook, E. T. Glacier Garden of Lucerne (Giants' Pots): p. 55.

Drew, F. The Jummoo and Kashmir Territories: p. 135.

Hayden, Dr. F. V. Erosion, E. Colorado: p. 122.

Helland, A. Greenland Fjords, &c.: p. 110.

Nordenskiöld, A. E. Glaciers, &c.: p. 110.

——. (Under **Kjelman**): p. 110.

——. Arctic Manual: p. 111.

3. *ROCK-FORMATION.*

Carpenter, Dr. W. B. On the Conditions which Determine the Presence or Absence of Animal Life on the Deep Sea Bottom. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 176–202.

Notes the early researches by Lenz, the vertical distribution of temperature, and the general circulation of the water. In the cold area of the N. Atlantic, where the temperature is under 30° Fahr., the fauna is boreal; British forms are dwarfed. The general circulation of oceanic water brings all in turn to the surface, where it absorbs oxygen. The Mediterranean has no such general circulation; its bottom water has therefore but little oxygen, and there life is absent. This absence of life is perhaps partly due to muddy sediment. The Red Sea is also cut off from the general circulation; but the water is clear, and there is probably a deep-sea fauna. The "green sand" of the Agulhas current and elsewhere is probably due to chemical substitution, the organic sarcode of foraminifera having been replaced by silicates, and the calcareous shells dissolved by sea water under great pressure. W. T.

——. On a piece of Limestone. *Good Words,* vol. xvi. pp. 713–720. A lecture to the working men of Bristol.

Church, Prof. A. H. Red Chalk and Red Clay. *Chem. News,* vol. xxxi. pp. 199, 200.

Gives the result of analyses of the Red Chalk of Hunstanton; shows that it contains (besides the calcium carbonate) silica, ferric oxide, alumina, magnesia, and potash. Compares this composition with that of the red clay of the Atlantic bed, and with the glauconite of the greensand formations; shows that a slight alteration of glauconite would make a product like the red chalk residue, but concludes that further analyses are required. F. D.

Dana, Prof. J. D. Corals and Coral Islands. Ed. 2. Pp. xx, 348. Plates. 8vo. *London.*

First describes the structure of reefs—the outer and inner reefs, the channels among them, the beach sand-rock, the thickness of reefs, and the formations in the sea outside the barrier reefs. Next, coral islands, their form, structure, and the soundings around them. Then the origin of reefs and islands, of coral sands and reef rocks, and of the shore platform, the effects of winds, the rate of growth of reefs, the cause of the barrier condition and of atolls. Chap. 4 gives the geographical distribution of coral reefs and islands. Chap. 5 the evidences of changes of level in the Pacific, and Chap. 6 the geological conclusions drawn from a comparison of old limestones with the conditions above described. W. W.

Delaire, Alexis. Le Fond des Mers; Études lithologiques. *Annales du Conservatoire.*

Fabri, B. [The Aqueduct of Narni, and its Works of Restoration.] *Il Politecnico*, April, pp. 185–195. Abstract in *Proc. Inst. Civ. Eng.* vol. xli. pp. 246, 247.

Bicarbonate of lime is deposited in greater quantity the greater the velocity of the water, and very little in stagnant water; the deposition rarely takes place except when water is in contact with the external air; the deposit increases with the temperature and with the distance from the source. W. T.

Heming, W. T. On Segregation. *Proc. Warwick Field Club* for 1874, pp. 38–54.

Suggests that all banded calcareous members of systems may be concluded to have segregated from deposits of calcareous mud. Objects to the theory of the formation of coal by successive growths and subsidences, and advocates that of the drifting out of vegetable matter into deep water, when it sank, decomposed, and became consolidated. Gives sections of the Shireoak Colliery, &c., to illustrate the thickness of "earths" between coal-seams. Adduces the purity of coal and the wide extent of some seams as evidences against the theory of growth and subsidence. W. W.

Hunt, R. A contribution to the theory of Mineral Veins. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 22-25.

After referring to the various theories concerning the origin of mineral veins by deposition from vapours or solutions coming from below, or solutions derived from the surrounding rocks, the author directs attention to what he calls 'surface force,' which is capable of separating metals from their solutions. He supposes that this force may have helped in the filling-up of metalliferous veins. C. L. N. F.

Huxley, Prof. T. H. On some of the Results of the Expedition of H.M.S. 'Challenger.' *Contemporary Review*, vol. xxv. pp. 639–660.

After reviewing the information that had previously been obtained as to the nature of the sea-bottom at great depths (chiefly in the Arctic and Antarctic Regions), Prof. Huxley shows that the 'Challenger' observations confirm the existence, in large quantities, of Diatoms in the Antarctic seas and in the mud of the sea-bottom, which is a fine siliceous powder, made up of diatomaceous plants and radiolarian animals. With respect to the *Globigerina* ooze of the zone between the Arctic and Antarctic Regions, he now agrees with Prof. W. Thomson that the *Globigerinæ* were essentially surface-animals, and that the ooze is made up of their shells which had sunk to the bottom. In certain areas glauconite partially replaces the calcareous remains. Red clay is now being formed at the greatest depths in a way different from that of ordinary sedimentary deposit. Though not convinced that Prof. Thomson's explanation of its origin (as the residue from the dissolving of the calcareous *Globigerina* shells) is the true one, he believes that the facts point to an 'aqueous' metamorphism as the cause that many masses of rock which one would have expected to show traces of life are Azoic; and thus he considers the discoveries of the 'Challenger' expedition support the doctrine of uniformitarianism in accounting for the gaps in the record of organic evolution. F. D.

Huxley, Prof. T. H. On the recent Work of the 'Challenger' Expedition, and its Bearing on Geological Problems. *Proc. R. Inst.* vol. vii. pp. 354–357.

To the same effect as the above.

Lebour, G. A. On the Deposits now forming in British Seas. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 158–164.

Chiefly an account of Delesse's book so far as it relates to British Seas. The areas of bare rock are described; then the marine, fluvio-marine, and shore deposits. Of chemical deposits the seas in question give no good examples. The distribution of the materials is believed to be fairly constant. W. T.

Le Conte, Prof. Joseph. Rate of Growth of Corals. *Amer. Journ.* ser. 3, vol. x. pp. 34–36.

Records observations made among the Florida reefs. Concludes that the annual growth of madrepore-points in the gulf is not more than 3½ to 4 inches per annum. G. A. L.

Papier, A. Sur l'agglutination par la mer de certains sables et cailloux de quartz des environs de Bône. [The cementing by the sea of certain sands and quartz-pebbles near Bône.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 46–48.

Thinks this cementing due to a kind of siliceous varnish deposited by the sea under the influence of very rapid evaporation.

Parfitt, E. On the Decay of Limestone fragments imbedded in the New Red Sandstone Cliffs on the coast of South Devon. *Trans. Devon. Assoc.* vol. vii. pp. 325–328.

Draws a comparison between the results of deep-sea soundings obtained by the naturalists of the 'Challenger' and the conditions under which the New Red Sandstone of South Devon would appear to have been deposited. In each case there is mud highly charged with red oxide of iron; and its presence would cause any calcareous matter to be rapidly dissolved. T. M. H.

Rivière, A. Note sur l'origine des calcaires. [Origin of Limestones.] *Compt. Rend.* t. lxxx. pp. 1596, 1597.

In the early times of the earth's history, the atmosphere being charged with various volatilized substances, the condensation and the precipitation of calcareous matter took place after a lowering of the temperature both of the atmosphere and of the earth. G. A. L.

Stewart, S. A. The Greensand and its Origin. *Sci. Goss.* no. 131, p. 243.

Controverts the view that the Greensand is formed of casts of

Foraminifera, and states that this is not the case with the Irish Greensand. The actual shells of Foraminifera occur plentifully and uninjured in English Greensand, whilst the glauconite-grains of Irish Greensand show no real resemblance to Foraminifera. W. W.

Wardle, Thomas. Annual Address, 1873. On Limestone, its Occurrence, Nature, and Origin. *N. Staff. Field Club Papers*, pp. 26–51.

Wollaston, G. H. On Nodules and Concretions. *Trans. Clifton Coll. Sci. Soc.* vol. ii. pt. 1, p. 79 (Abstract).

See also :—

Doelter, Dr. C., and Dr. R. Hoernes. Chemical Origin of Dolomite: p. 210.

4. *MISCELLANEOUS.*

Croft, Thomas. The Self-propagating Nature of Centrifugal Force as it affects our Earth and other Portions of our Solar System. Pp. 20. 8vo. *Papeete* (*Tahiti*).
Part 1. Geological View, pp. 1–16.

Croll, T. Climate and Time in their Geological Relations. A Theory of Secular Changes of the Earth's Climate. Pp. xvii, 577; 8 plates. 8vo. *London.*

Starts with the thesis, that "climatic agents have been the principal factors concerned in that long succession of events and changes which have taken place since the solidification of the earth's crust." The distribution of heat over the globe by Ocean Currents is then discussed; and it is shown that they carry the surplus heat from tropical regions to temper the severe climate of high latitudes. In Chaps. 4, 5 the effect of changes in the eccentricity of the earth's orbit combined with the Precession of the Equinoxes and the Revolution of the Apsidal Line is discussed, and it is shown that during a period of high eccentricity a Glacial Period will be produced in that hemisphere whose winter occurs in Aphelion. Chaps. 6–14 attack the Gravitation Theory of the cause of Ocean Currents, and maintain that these currents are due to the action of prevalent winds. Chaps. 15, 16 give evidence for warm interglacial periods; Chaps. 17, 18 for former glacial periods in the earth's history. Chap. 19 contains an attempt to determine the absolute date of the last glacial epoch; and Chap. 20 explains a method of employing the rate of subaërial denudation as a measure of geological time. In Chap. 21 it is shown that it is probable that the sun was formed by the collision of two bodies, the amount of heat produced by the condensation of a nebulous mass, not originally possessed of heat, being believed to be insufficient for the needs of geology. Chap. 22 discusses a means of arriving at an estimate of the mean thickness of the sedimentary rocks. Chaps. 23, 24 treat of the change in sea-level which would be produced by the shifting of the earth's centre of gravity by a polar ice-cap. Chap. 25 deals with the effect which a change in the Obliquity of the Ecliptic would have on Climate and the Level of the Sea; when, during a period of high eccentricity, the obliquity reaches its maximum, the hemisphere under glacial conditions would have the severity of its climate somewhat lessened, and the equable climate of the other hemisphere would be rendered still more genial. In Chap. 26 it is maintained that Coal is an Interglacial formation. Chap. 27 deals with the path of the Ice-sheet in N.W. Europe, with special reference to the Boulder Clay of Caithness; Chap. 28 with the N. of England Ice-sheet and the dispersion of erratics from Wastdale Crag; Chap. 29 with Præglacial River Channels, and the evidence they furnish of a continental period in Britain; Chaps. 30, 31 are devoted to the Theories of Glacier-motion. A. H. G.

Deane, G. Cosmical Theories of the Earth. Pp. 29. *Proc. Birmingham Nat. Hist. Soc.*

A Retiring Presidential Address.

Fisher, Rev. O. On the Inequalities of the Earth's Surface, viewed in connection with the Secular Cooling. *Trans. Cambridge Phil. Soc.* vol. xii. pt. 2, pp. 20. 4to.

Fritz, Prof. H. Aus der kosmischen Physik. [Cosmical Physics.] 22 pp. 4to. *Zürich.*

Forms the new year's number of the Zürich Society of Naturalists, vol. lxxvii.

Green, W. L. Vestiges of the Molten Globe. Pp. 8, 59; 3 plates (maps). 8vo. *London.*

Herschel, Prof. A. S., and G. A. Lebour. Report of a Committee on Experiments to determine the Thermal Conductivities of certain Rocks, showing especially the Geological Aspects of the Investigation. *Rep. Brit. Assoc.* for 1874, pp. 128–132.

Give the results of experiments on 19 kinds of rock. After tabulating these observations and describing the mode of experimentation, a preliminary attempt is made to frame a scale of rock-resistances to the passage of heat. From the data arrived at, the reistances group themselves as follows :—A, Granite (with least resistance). B, Grit. C, Chalk. D, Basalt. E, —? F, —? G, —? H, —? I, Shale. K, Coal and Plaster of Paris (highest resistance). G. A. L.

Kinahan, G. H. On the proposed Inundation of the Sahara. *Iron,* vol. vi. p. 170.

Considers it probable that the retreat of the snow-line in Europe from its earlier low level to its present position was brought about by the drying up of the sea that once occupied the Sahara desert, and suggests that the proposed change might cause S. Europe to be enveloped in perpetual snow, and change the Rhine and Danube into great glaciers. F. D.

Landerer, José J. Introduccion al estudio sobre el origen del granito y de la caliza. [Origin of Granite and of Limestone.] *Madrid.*

Considers that granite rocks were originally vitrified, and that calcium was primitively deposited on the earth's crust as protoxide.

Leigh, Dr. John. [Report of a Lecture by.] *Journ. App. Sci.* vol. vi. pp. 12, 13.

Treats of the history of the formation of the earth from the time of its supposed incandescent state.

Moigno, l'Abbé. Physique et Physique du Globe. [Physics and Physical History of the Earth.] 18mo. *Paris.*

Papers by Tyndall, Carpenter, Ramsay, Raphaël de Rossi, and Félix Plateau, translated by Abbé Moigno.

Peschel, O. Ueber die angeblichen Schwankungen des Schwerpunktes unserer Erde. [Alleged Fluctuations of the Earth's Centre of Gravity.] *Das Ausland*, pp. 71–73.

Argues against Prof. Schmick's theory of ocean transposition.

——. Neue Probleme der vergleichenden Erdkunde. 14. Die Entwickelungsgeschichte der stehenden Wasser auf der Erde. [New Problems in comparative Earth-knowledge.—14. Origin of the Standing Waters of the Earth.] *Das Ausland*, pp. 205–210, 233–235.

Sargeaunt, Capt. R. A. Notes on the Climate of the Earth, Past and Present. Pp. 73. *London.*

Gives a sketch of the causes that produce the climate of a place, and a review of the various ways of accounting for former changes of climate on the earth's surface. Of these the author allows the greatest force to the varying eccentricity of the earth's orbit. F. D.

Stark, F. Ueber die Möglichkeit der Axenänderung der Erde. [Possibility of a Change in the Earth's Axis.] *Munich.*

Tschermak, G. Die Bildung der Meteoriten und der Vulkanismus. [Formation of Meteorites and Vulcanicity.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Bd. lxxi.; translated in *Boll. R. Com. Geol. Ital.* pp. 381–392.

Virlet, d'Aoust. Le niveau moyen des mers du globe. [The mean Sea-level of the Globe.] *Soc. Géogr. Paris.*

APPLIED AND ECONOMIC GEOLOGY.

Aigner, August. Die Fabrikation des Cements und dessen Anwendung für Soolenleitungen in Ischl. [Manufacture of Cement and its use for Salt-works at Ischl.] *Jahrb. k.-k. Bergakad.* Bd. xxiii. pp. 134–144.

Describes the manufacture of cement from certain hydraulic limestones, viz. the Lower Tertiary Marls near Kufstein, and the Neocomian Limestone covering the salt-bearing rocks at Ischl. Analyses of both are given. The latter is remarkable for the large amount of carbonate of iron. H. B.

Anderson, W. Notes of a Visit paid to some Peat Works in the neighbourhood of St. Petersburg in May 1875. *Proc. Inst. Civ. Eng.* vol. xli. pp. 202–205.

A vast peat bog exists 3½ miles S. of Alexandroffsky; the peat has been formed, and is still forming, about the base of a scrubby birch forest. The bottom is whitish clay; the peat attains a thickness of 18 feet in alternate layers of compact and mossy turf, the latter full of water. When dug in May the peat contains 75 p. c. of moisture. When dried, and as supplied to the steel-works, it contains about 25 p. c. of ash and moisture, the ash varying from 3 to 5 p. c. A comparison of the calorific power of peat with those of other fuels is given. W. T.

André, G. G. A Practical Treatise on Coal Mining. 4to. *London.* 36 plates.

Anon. Der Silber- und Blei-Bergbau zu Přibram (Böhmen). Zur Feier der im Adalbert-Schacht erreichten Saigerteufe von 1000 Meter. Herausgegeben von der k.-k. Berg-Direction zu Přibram. [Silver and Lead Mining at Přibram, Bohemia.] Pp. 84; 2 plates of sections and a geological map. 4to. *Vienna.*

Published in commemoration of the Adalbert shaft having reached the depth of 1000 metres. Gives a history of mining at Přibram; describes the geology of the country, the lodes of part of the district, and the minerals of the Přibram veins; compares the depths of the deepest mines in different countries; gives the depth of the Adalbert shaft for each year from 1779, the temperature of the mine at various depths in 1874, the contents of the vein-stuff at different times and at different depths, and detailed statistics of the Přibram mines in general from 1726 to 1874. F. W. R.

——. Das Salz, eine geschichtliche und technische Skizze. [Salt: an historical and technical Sketch.] *Jahrb. k.-k. Bergakad.* Bd. xxiii. pp. 286-301.

The first 6 pages contain a general outline of the position and character of the salt deposits in the Austrian Alps, and the history of their development. The remainder is devoted to working and manufacturing details. H. B.

Anon. New mode of using the Magnetic Needle in searching for Iron Ore [Sweden]. *Iron*, vol. vi. n. s. no. 130, p. 40.

A notice of **M. Thalen's** paper in *Journ. de Physique.*

——. *Iron*, n. s. vol. vi. pp. 194, 195. A Gold Quest. Notice of the Gold Mines of North Wales.—P. 519. The Plumbago Mines of Borrowdale.

——. Petroleum Oil; its production, price, and supply. *Coll. Guard.* vol. xxx. p. 563. Reprinted from the *National Oil Journal.*

——. Statistique minière et sidérurgique de Belgique. [Mining and Metallurgical Statistics of Belgium.] 40 pp. *Brussels.*

For the decade 1865–1874.

——. Statistique de l'industrie minérale de la France pour l'année 1874. [Mineral Statistics of France for 1874.] *Journal Officiel,* 28 April; and *Ann. Mines,* sér. 7, vol. vii. pp. 606–611.

——. (Mining Administration of Wieleczka.) Bericht über den Einbruch von Süsswässern in das Steinsalzbergwerk zu Wieliczka. [Inundation and Draining of the Salt Mine of Wieliczka.] *Jahrb. k.-k. Bergakad.* Bd. xxiii. pp. 145-222.

A memoir on the drowning of these mines in 1868, and the subsequent measures adopted for their recovery. The introduction contains a sketch of the geology; the littoral marine origin of the deposit is strongly insisted on against an open sea or lacustrine origin. H. B.

Appleton, Edward. The Economic Geology of Devon. *Trans. Devon. Assoc.* vol. vii. pp. 234–246.

The products of the county are grouped under the following heads:—Building Materials, Clays, Coal, and Road Materials, the first two being specially treated with regard to their use for architectural purposes. Under "Coal" is included the lignite of Bovey, and the Anthracite of Bideford. T. M. H.

Beilby, J. Wood. Reasons suggestive of Mining on Physical Principles for Gold and Coal. A Review of the Assumptions of Geologists. Pp. 54. 8vo. *Melbourne.*

Beloe, C. H. The Liverpool Waterworks. Ed. 3. Pp. 39. Plate. 8vo. *London & New York.* [Ed. 1 in 1869, reprinted from the *Architect.*]

About a third of the water is from wells in the New Red Sandstone. Some particulars as to the depth and yield of these wells are given.

Bewick, T. J. A Project for supplying Newcastle-on-Tyne, Gateshead, and other Towns and Villages in Tynedale with Water from the Northumberland Lakes District. *Trans. N. of Eng. Inst. Eng.* vol. xxiv. part 1, pp. 85–90; Discussion, pp. 90–95 (map).

Describes the physical geography of the country around the Northumberland Lakes (which lie on the N. of the Roman wall and the

Basaltic Crags, about 30 miles W. of Newcastle), and the geological nature of the gathering-ground. W. T.

Binnie, A. R. The Nágpúr Waterworks; with Observations on the Rainfall, the Flow from the Ground, and Evaporation at Nágpúr; and on the Fluctuation of Rainfall in India and in other places. *Proc. Inst. Civ. Eng.* vol. xxxix. pp. 1–31; Discussion, pp. 32–61. Plates.

Nágpúr is 1000 feet above the sea. The city is mostly built on gneiss and other metamorphic rocks; overlying these is basalt, which forms much of the country round. In 1864 there were 1231 wells in the city, about 900 of which yielded brackish water. The city is now supplied by gravitation works. W. T.

Bouhy, V. The Production and Consumption of Coal. *Rev. Univ. Mines*, Jan. and Feb. pp. 109–145. Abstract in *Proc. Inst. Civ. Eng.* vol. xliii. pp. 393–395.

Chiefly statistical, referring to all countries.

Cartwright, F. L. Petroleum. *Trans. Clifton Coll. Sci. Soc.* vol. ii. part 1, pp. 103–105.

Notes the chief places at which it occurs.

Clark, D. R. The St. Gothard Tunnel. *Proc. Inst. Civ. Eng.* vol. xlii. pp. 228–251.

Compiled from the Official Reports. The rocks passed through, according to Prof. Fritsch, are gneiss, mica-schist, and hornblende-schist, with some crystalline limestone, and a little dolomite, gypsum, &c. The beds have a fan-shaped structure, being vertical in the middle, at the S. end dipping N., and at the N. end dipping S. Much water was met with; in some places it issued at the rate of 3000 gallons a minute. Details of methods and rate of work in various rocks are given, and observations on the temperature. W. T.

Collins, J. H. Principles of Metal Mining. Pp. 149; 76 illustrations. 8vo. *London & Glasgow.*

Chaps. 1–5 are geological:—Introduction; Geology of Mining Districts; Minerals and Rocks, The Nature of Mineral Veins, "Heaves," etc. A Glossary is appended. W. T.

Cordella, André. Description des produits des mines du Laurium et d'Oropos exposés à la troisième période Olympienne. [Description of the Produce of the Mines of Laurium and Oropos in the third Olympiad.] *Athens.*

Cotton, Gen. F. Notes on the Works of Sowing and Consolidation of the Dunes or Coast Sand-hills of Gascony, . . . with a view to the introduction of similar works on the Sand-drifts . . . of Beirût. *Journ. R. Agric. Soc.* ser. 2, vol. xi. pp. 435–442.

The Dunes of Gascony are nearly 120 miles long. The sand formerly advanced towards the interior, but is now fixed by plantations of sea pines. The general height of the Dunes is from 160 to 230 feet; but near the middle of the chain some are 300 feet high. W. T.

Evans, M., and **T. Bowstead.** Report on laying down land to Permanent Pasture. *Journ. R. Agric. Soc.* ser. 2, vol. xi, pp. 442–509.

Contains 55 Sub-Reports from farms in various parts of England and Wales (pp. 452–497). There are notes on the soils; and in many cases the rock-formations beneath are mentioned. W. T.

Everwijn, H. Onderzoek von Kolen volgens de methode van Hilt, met eine Bijlage. [The Search for Coal after the Method of Van Hilt, with an Appendix.] *Jaarb. Mijn. Ned. O.-Ind.* 3 Jaar. 2 Deel, pp. 119–132.

Frankland, Dr. E., and **J. C. Morton.** Sixth Report of the Commissioners appointed to inquire into the best means of preventing the Pollution of Rivers.—Domestic Water Supply of Great Britain. Fol. *Lond.* Pp. xi, 525. Maps and Plans. [Although dated 1874, not published till late in 1875.]

A Geological Map of the British Islands (scale 25 m. to 1 inch), prepared by **E. Best**, accompanies the Report. Part ii. (pp. 24–131) gives analyses of about 2000 waters, classified as follows:—Upland Surface-waters, Surface-waters from Cultivated Land, Shallow Well Waters, Deep Well Waters, Spring Waters; each class is subdivided according to the quality of the water, and again as to the beds in which it occurs. Part iv. Descriptive, is divided as follows:—Water Supply of the Metropolis; Water Supply of Provincial Cities, Towns and Valleys; Rural Water Supply; Water Supply to the Royal Residences. Appendices 5 and 6 by **J. Bravender**; The Watershed of the Upper Thames, Remarks on the Geological Strata of the Upper Thames, with notes on the yield of Springs in the Basin of that River. Geological notes are scattered throughout. W. T.

Frazer, Prof. Persifor. Hydro-Geology. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 108–116.

Formulated rules for solving questions of water-supply, and particulars of a reconnoissance for water made on Lehigh Mountain.

Helmersen, G. v. Einige Erwägungen über die Bedeutung der Steinkohlen-Industrie in Russland. [Significance of the Coal-Industry in Russia.] *St. Petersburger Zeitung*, Jan. 7, 15, 16, 17.

Opening address at the annual meeting of the Imperial Academy of Sciences, St. Petersburg.

Hunt, Robert. Mineral Statistics of the United Kingdom of Great Britain and Ireland, for the year 1874, with an Appendix. Pp. xv, 279. 8vo. *London.*

Gives the amount and value of the various minerals raised in 1874. The character of the iron-ores from the various districts is stated. The Appendix (pp. 181–279) gives a list of the mines in the United Kingdom, noting the chief minerals produced in each. W. T.

——. On the present state of Tin production and the Tin trade. *Rep. Miners' Assoc. Cornwall* for 1874 and part of 1875, pp. 35–39.

The total output of tin-ore by Cornwall and Devon, as well as metallic tin by Banca and Billiton, is given for the years 1864–1873. It is calculated that the production of British, Foreign, and Colonial Tin was 18,544 tons in 1873, and 21,193 tons in 1874. C. L. N. F.

Jacob, —. [Nickel, Cobalt, and Bismuth in Sardinia.] *Rev. Géol.* t. xii. pp. 98, 99.

Describes the Fenugu-Sibiri mine, where veins yielding the above metals have been discovered. The mine is in the commune of Gonos-Fanadiga, province of Cagliari, among the high mountains skirting the granitic plateau of Arbus. G. A. L.

Jenkins, H. M. Report on the Agriculture of Sweden and Norway. *Journ. R. Agric. Soc.* ser 2, vol. xi. p. 162.

Physical Features, Geology, and Climate noticed, pp. 168–175.

Johnson, S. W. Peat and its Uses as a Fertiliser. *Journ. Bath and W. Engl. Soc.* ser. 3, vol. vii. pp. 126–155.

Notices the method of formation of peat and its varied characters in different parts of the world. Observes that the acids of peat exert a powerful decomposing effect on soils. H. B. W.

Jones, J. B. Report on the Somersetshire Farm-Prize Competition. *Journ. R. Agric. Soc.* ser. 2, vol. xi. pp. 517–597.

Refers to 17 farms in various parts of the county. Notes on the Geology are given in most cases.

Kolb, J. [The Peat of the Valley of the Somme.] *Bull. Soc. d'Encouragement*, Jan., pp. 42–54. Abstract in *Proc. Inst. Civ. Eng.* vol. xl. p. 351.

Under moderately favourable circumstances, 3 feet of peat can be grown in from 30 to 40 years.

Malherbe, R. De la Cartographie minière. [On Mining Maps.] 106 pp., 3 plates. *Brussels.*

Maynard, J. Mines of the Illogan district. 42nd *Ann. Rep. R. Cornwall Pol. Soc.* pp. 84–87.

Gives information about Cook's-kitchen mine, Wheal Crofty, North Wheal Crofty, and Wheal Emily Henrietta.

Meade, R. *Mining Journ.* vol. xlv. The Iron Industries of:— Cumberland, p. 95; Lancashire, p. 179; Durham and Northumberland, p. 235; West Riding of Yorkshire, p. 343; Derbyshire, p. 399; North Staffordshire, p. 455; Shropshire, pp. 675, 676; South Staffordshire and Worcestershire, pp. 770, 815; Monmouthshire, pp. 910, 955.

Collects and arranges the facts bearing on the progress and development of the respective districts, with statistical information of the production of iron-ore, &c. Analyses of the various ores of iron, and quantities of materials used, namely, ore, coal, &c. For some districts the production of the coal-fields, the output of the mines, and analyses of the coal, are given. R. M.

Oxland, Dr. R. Mineral Resources of Devon and Cornwall. Earthy Minerals. *Trans. Plymouth Inst.* vol. v. part 2, pp. 196–204.

Water is treated of and its economic uses pointed out. China-clay is noticed, and the method of working it illustrated by reference to the Lee Moor works, near Plympton. H. B. W.

Pankhurst, [E. A.] The Ores of Iron. *22nd Ann. Rep. Brighton Nat. Hist. Soc.* pp. 147–152.

A general description of iron-ores, chiefly of England, Norway, and Sweden, with notes on statistics.

Pechin, E. C. The Minerals of South-western Pennsylvania. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 399–408.

Describes the occurrence of coal, iron-ores, fire-clay, &c., with the view to their industrial development.

Peyton, J. E. H. On the Geological Conditions affecting the Water Supply [of Hastings]. *Hastings and St. Leonards Phil. Soc.*, Jan. 26. Reprinted from Newspaper Report.

Although referring especially to Hastings, gives information as to the general conditions affecting water-supply. The origin of springs, and the influence of faults and fissures are referred to. Details of wells and springs around Hastings, and notes as to the water-supply of Croydon, Folkestone, and Eastbourne are given. W. T.

[Poole, H. S.] Report of the Department of Mines, Nova Scotia, for the year 1874. Pp. 88; plate. 8vo. *Halifax.*

Contains a review of the present position of the mining industries of the Province, with descriptions of recent improvements in mining. Gives detailed statistics for 1874. F. W. R.

Provis, John. On the Lead Ores of Cornwall. *Ann. Rep. Miners' Assoc. Cornwall* for 1874 and part of 1875, pp. 70–76.

Relates mainly to statistics of the amount of lead-ore produced by Cornwall and to the yield of lead and silver of the ores from various mines in Cornwall and Devon. The bearings of some of the lodes are stated. C. L. N. F.

Readwin, T. A. Gold in Wales. *Min. Journ.* pp. 845, 929, 1013, 1042, 1096, 1208, 1236, 1292, 1319, 1347, 1404, 1431.

Ross, O. C. D. Petroleum and other Mineral Oils applied to the Manufacture of Gas. *Proc. Inst. Civ. Eng.* vol. xl. pp. 150–162.

A sketch of the geographical distribution of bitumen, bituminous shales, and petroleum, pp. 158, 159. Tables of the composition and value of various shales and oils, pp. 161, 162. W. T.

Sandberg, C. P. Engineering in Sweden. *Proc. Inst. Civ. Eng.* vol. xxxix. pp. 191–211.

Iron-making and Mining described, pp. 202–211.

Schondorff, Dr. A. Koksausbeute und Backfähigkeit der Steinkohlen des Saarbeckens. [Coking Properties of the Coals of

Saarbrücken.] *Zeitsch. Berg- Hutt. Salinenw.* Bd. xxiii. part 3, pp. 135–162. Abstract in *Proc. Inst. Civ. Eng.* vol. xliii. pp. 397–399.

Gives the results of 282 coking trials, arranging the coals in their stratigraphical order. The yield of coke and the coking character increase with the age of the seams; the amount of hygroscopic water is less in the older seams. Different kinds of coal occur in each seam; the author investigated the characters of these, and gives some conclusions as to the kind of vegetation from which they were severally produced. H. B.

Sjögren, A. Anteckningar i pratisk geognosi. iii. Om malmlagers fältstúpning. [Suggestions in Practical Geology. iii. Faulting of Ore-deposits.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. pp. 438–450; plate, 5 figs. in text.

Smock, J. C. Mining Clay. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 211–215.

The method of mining clay at Chesquake's Creek, New Jersey, is described, and a geological section given.

Smyth, Warington W. The Ores of Iron considered in their Geological relations. *Coll. Guard.* vol. xxix. pp. 737, 738, and *Min. Journ.* vol. xlv. p. 550.

Lecture to the Iron and Steel Institute, May 15, 1875.

——. Lectures on Mining at the Royal School of Mines. *Min. Journ.* vol. xlv. pp. 1247, 1274, 1302, 1330, 1358, 1386, 1414.

Spon, Ernest. Water Supply. The Present Practice of Sinking and Boring Wells; with Geological considerations and examples of Wells executed. Pp. vii, 217. Plate; 271 woodcuts (figs. 1–16 are geological diagram-sections; figs. 222–271 are chiefly sections of wells). 8vo. *London.*

Chap. 1, pp. 1–34, Geological considerations; nature of springs, thickness of strata, rainfall, &c. Chap. 2, pp. 35–39, New Red Sandstone. Chap. 7, pp. 155–201, Examples of Wells, and of districts supplied by Wells. On pp. 190–201 there is a Table of Wells in abstract. Chap. 8, pp. 202–210, Tables [of Strata, &c.] and miscellaneous information. W. T.

Topley, W. Report [to the Corporation] on the Water Supply of Hastings. Pp. 18. Fol. *Hastings.*

Describes the existing gravitation works and wells. The possibility of increasing the supply from the wells is discussed, as also proposed schemes for obtaining water from the Chalk and Lower Greensand. Analyses of Water, by **C. Ashenden**, are appended. W. T.

Trevelyan, Sir W. C. Peat. *Journ. Soc. Arts,* vol. xxiii. p. 1013.

Advocates the use of peat as a building-material for partition-walls.

Trickett, S. Red Corsehill Stone. *Building News*, vol. xxix. no. 1073, p. 129.

Describes Red [Permian] Sandstone of Dumfriesshire.

Windakiewicz, Edward. Das Erdöl und Erdwachs in Galizien. [Petroleum and Mineral Wax (Ozokerite) of Galicia.] *Jahrb. k.-k. Bergakad.* Bd. xxiii. pp. 1–133. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 343–345.

The minerals in question are found within a district averaging about 15 miles in breadth and about 270 in length, the area being estimated at about one ninth of that of the oil-regions of America. The principal centre of production is in the neighbourhood of Boryslaw. The strata consist of alternations of shales, sandstone, and plastic clays belonging to the Carpathian Sandstone series, which are sunk through. The ozokerite occurs in beds from 1 to 3 inches thick between the planes of deposition of alternate strata; but occasional veins in cracks, crossing the stratification, and up to 3 feet in thickness, are found. When the wax is exhausted the shaft is deepened for crude oil, which is scooped up in buckets. The mode of working is remarkably primitive, there being some 12,000 shafts in the immediate neighbourhood of Boryslaw. Details are given of the results of several deep borings. The petroleum is considered to be derived from a deep-seated source, probably from an underground extension of the Coal Measures or older Palæozoic rocks. The technical and economic details of this remarkable industry are described. H. B.

Worth, R. N. The Economic Geology of Devon. *Trans. Devon Assoc.* vol. vii. pp. 209-233.

The materials obtained in the county and used in building or road-making are described; and statistics are given of the number and produce of the metalliferous mines. T. M. H.

——. The Antiquity of Cornish Mining. *42nd Ann. Rep. R. Cornwall Pol. Soc.* pp. 42–45 (Abstract).

The general conclusions are:—that the historical evidence of the antiquity of mining carries it back at least 2300 years; that the inferential evidence nearly, if not quite, doubles that period; and that the geological evidence antedates its commencement to a time when the mammoth either still existed or had not long disappeared, and when the general level of Cornwall and Devon was at least some 30 feet higher than now. C. L. N. F.

——. The Building and Ornamental Stones of Cornwall, with notes on their Archæology. *Journ. R. Inst. Cornwall*, no. xvii. pp. 215–219.

Granite, elvans, traps, and killas all furnish good building-stones. The Catacleuse trap, Pentewan Elvan, and Polyphant stone were used as early as the 12th century. The easily wrought St. Stephen's granite is a china-stone. The roofing-slate from Delabole is still largely used; and in the Lizard Serpentine Cornwall possesses the handsomest ornamental stone in the kingdom. C. L. N. F.

Report of the Hydrotechnic Committee on the Diminution of Water in Springs and Rivers. *Zeitsch. des Oest. Ingenieur u. Architek-Vereins*, nos. 8 & 9, 1875, pp. 157–165. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 271–273.

Refers especially to the Danube, Rhine, and Elbe. The mean level of the Rhine is apparently unchanged; but the low level is lower and the floods greater. The Elbe, at Dresden, shows a lowering of the mean level. The changes are due to cultivation, drainage, and the unsystematic destruction of forests. W. T.

Reports on the Vienna Universal Exhibition of 1873. In 4 parts (= vols.) 8vo. *London.*

Part I. Colonial Produce, by **W. Robinson**, pp. 115–368. Raw Materials, by **Prof. Archer**, pp. 369–428. Mining Produce, excluding Fossil Fuels, by **Dr. F. von Vivenot**, pp. 561–563.

Part II. Report on the Utilization of Peat and Peat Lands, by **Frederick A. Paget**, pp. 269–349. Mineral Fuel, by **W. H. Maw** and **James Dredge**, pp. 353–371.

Part III. Building Materials at the Vienna Exhibition, by **W. H. Maw** and **James Dredge**, pp. 388–407. Iron and Steel, by **W. D. Maw** and **J. Dredge** (contains some analyses of ores), pp. 408–518. Civil Engineering, by **W. H. Maw** and **J. Dredge**, contains some geological notes of the Mont Cenis tunnel at pp. 554–556.

Part IV., not geological, published 1874. W. W.

See also :—

Andrew, T. Mines and Mining in Cornwall and Devon: p. 1.

Buckman, J. Cornwall: p. 7.

Judd, J. W. Rutland: p. 25.

Schweitzer, Prof. P. Water Supply of Columbia, Missouri: p. 221.

Topley, W. Weald, Economic Geology: p. 40.

Worth, Dr. H. Economic Aspects of Trans-Indus Salt Region: p. 143, under **Wynne.**

[Many papers that refer to the practical application of geology, and to the occurrence of coal, metalliferous ores, &c., are noticed under STRATIGRAPHICAL GEOLOGY.]

PETROLOGY.

Achiardi, Ant. d'. Sulla cordierite nel granito normale dell' Elba e sulle correlazioni delle rocce granitiche con le trachitiche. [The Cordierite of the normal granite of Elba and the Correlation of the granitic and trachytic rocks.] *Atti Soc. tosc. Sci. Nat.*

Allport, S. On the Classification and Nomenclature of Rocks. *Geol. Mag.* dec. ii. vol. ii. pp. 583–587.

Criticises certain names suggested by Mr. Kinahan, and other points connected with nomenclatures often in use.

Anger, F. Arno. Mikroskopische Studien über klastische Gesteine. [Microscopic studies of clastic rocks.] *Min. Mitt.* Heft iii. pp. 153–174.

Zirkel and Credner have already worked at this subject [see GEOLOGICAL RECORD for 1874, pp. 199, 200]. Anger has extended his observations to sandstones, slates, and tuffs, and finds that these clastic rocks contain both sedimentary and crystalline constituents. Quartz and mica are the most frequent clastic materials; calcite is the most common crystalline element. Iron-glance is commonly present, and microscopic crystals of tourmaline (hemimorphic) are frequent in sedimentary rocks. Glauconite is not amorphous, but exhibits double refraction. Certain felsite-tuffs are not purely clastic; the basalt-tuffs of Gleichenberg in Styria are quartziferous palagonite-tuffs. The principal constituent of the trass of the Laacher See is leucite. F. W. R.

Anon. The Phœnix Fire-Brick Works, Tavistock, Devon. *Iron*, vol. vi. n. s. pp. 104, 105.

Analysis of the fire-clay by **Dr. Noad.** Analyses of other clays (by **Prof. Abel**) reprinted for comparison.

——. [Argillaceous limestone.] *Rev. Géol.* t. xii. p. 49.

Analyses of argillaceous limestone from the commune of Brion, Canton of Levroux (Indre), made at the École des Mines laboratory. The rock is Jurassic. G. A. L.

——. [Cement-stones.] *Rev. Géol.* t. xii. pp. 50, 51.

Six analyses of cement-stones from Chapareillan (Isère), Saint-Bauzille-de-Putois (Hérault), and Raincy (Seine-et-Oise).

——. [Analysis of brick-earth from Broin near Seurre (Côte d'Or).] *Rev. Géol.* t. xii. pp. 57.

——. [French fire-clays and earths.] *Rev. Géol.* t. xii. p. 59.

Five analyses of earths from Briou near Vierzon (Cher) and Buzançais (Indre), and of clays from near Amiens (Somme) and Sermaize (Marne). All refractory. G. A. L.

Baltzer, A. Geognostisch-chemische Mittheilungen über die neuesten Eruptionen auf Vulcano und die Producte derselben. [Geologico-chemical Notes on the latest Eruptions of Vulcano.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvi. Heft 1, pp. 36–62, with 3 plates.

Vulcano was active from Aug. 1873 to Dec. 1874, with a period of comparative repose from Feb. to July 1874. The ejecta consisted chiefly of ashes and sand: there was no lava. Two kinds of ashes were recognized, a normal grey ash and a peculiar snow-white ash. The latter is highly siliceous, the silica existing chiefly as tridymite. The recent products are rich in silica, whilst according to earlier authorities lava poor in silica was formerly ejected. F. W. R.

Barachon, —. [Analysis of argillaceous Sandstone associated with the Fire-clay of Fumel.] *Rev. Géol.* t. xii. pp. 57, 58.

——. [Analyses of Fire-clay from Fumel and Cuzom.] *Rev. Géol.* t. xii. pp. 59, 60.

Barral, J. A. [Analysis of Pond-mud from Bourg (Loiret).] *Bull. Soc. centr. Agric. France,* 3 sér. t. ix. p. 839, and *Rev. Géol.* t. xii. pp. 58, 59.

Barré, —. [Bauxite in Austria.] *Rev. Géol.* t. xi. p. 75.

Note of occurrence at Dreistetten near Semmering, and at Wochem in Carniola. Analyses of bauxite from both localities given.

Beghin, —, and Ch. Mène. Analyse du charbon minéral de l'île de Sudéroë. [Analysis of the Suderöe Coal.] *Compt. Rend.* t. lxxx. pp. 1404, 1405.

This lignite is enclosed among doleritic rocks. From its composition the authors conclude it to be Tertiary.

Blake, James. On the Structure of the Sonorous Sand from Kauai. *Proc. Calif. Ac. Sci.* vol. v. pt. iii. pp. 357, 358. See also letter by **W. R. Frink,** pp. 338–340.

The grains were chiefly parts of corals, etc., all more or less perforated: hence the sound when they are in motion.

Bořicky, Dr. E. [Bohemian Basalts.] *N. Jahrb.* Heft iii. pp. 288–290.

Letter referring to Prof. Möhl's Catalogue of typical basalts [see GEOLOGICAL RECORD for 1874, p. 211], claiming priority for recognizing the "magma-basalts," and correcting some errors, such as the assertion that phonolite-basalts occur as dykes in phonolite. F. W. R.

Browning, A. The probable Influence of Railway Construction in Natal, &c. *Journ. Soc. Arts,* vol. xxiii. no. 1169, p. 475.

Gives an analysis of Dundee coal at p. 476.

Campbell-Brown, Dr. J. On the agricultural chemistry of the Tea Plantations of India. *Journ. Chem. Soc.* pp. 1217–1228.

Contains 6 analyses of soils of Indian Tea Plantations (pp. 1222, 1223).

Carne, Elizabeth T. On Transition and Metamorphosis of Rocks in the Land's End District. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part i. pp. 1-21.

Distinguishes 5 well marked kinds of rock:—1, Granite; 2, Hornblende- and actinolite-rock and greenstone; 3, Purple killas; 4, Felspathic rocks, including elvans; 5, Coarse and fine-grained rocks or Lelant beds. Endeavours to show that some of these rocks pass into one another. Combats the theory of the metamorphic origin of granite. C. L. N. F.

Chevron, L. Analyses de quelques roches crystallines de la Belgique et de l'Ardenne française. [Analyses of some Crystalline Rocks of Belgium and the French Ardennes.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires,* pp. 189–196.

The analyses are:—i, Of *Eurites* from Spa, Monstreux, Grand-Manil, and Piroy. ii. *Diorites* from Challes-lez-Stavelot, Quenast (massive chlorophyre of Dumont), and Lembecq. iii. *Amphibolite* from N. of Mairus (Diorite of Dumont). iv. *Gabbros* from Hozémont (Hypersthenite of Dumont) and Les Tombes (Mozet). v. *Chloriteschist* from S. of Mairus. vi. *Porphyroids* from Marius mill (Hyalophyre of Dumont), E. of Révin (Slaty Albite of Dumont), Bois des Rois, Rouquières (schistose Chlorophyre of Dumont), and Pilet (Eurite of Dumont). G. A. L.

Church, Prof. A. H. Red Chalk and Red Clay. *Chem. News,* vol. xxxi. pp. 199, 200; also *Geol. Mag.* dec. ii. vol. ii. pp. 331–334.

The author has separated from the red chalk of Hunstanton a reddish clay like that described by the officers of the 'Challenger' as occurring at great depths in the Atlantic. The chalk yielded about 9·3 p. c. of residue, the analysis of which is here published. It appears to resemble deep-sea clay. The relationship of the white, the grey, and the red chalk to the globigerina ooze, the grey, and the red ooze respectively is pointed out. F. W. R.

Colson, C. Experiments on the Portland Cement used in the Portsmouth Dockyard Extension Works. *Proc. Inst. Civ. Eng.* vol. xli. p. 125.

Analyses of Gault Clay and Grey Chalk from Burham, Kent, and of river-mud from the Medway, are given on pp. 141, 142.

Credner, Prof. Hermann. Die granitischen Gänge des sächsischen Granulitgebirges. [Granitic Veins of the Granulite Rocks of Saxony.] *Zeitsch. deutsch. geol. Ges.* pp. 104–223.

The granulites of Saxony are cut through by a great number of veins of granite, syenite, and pegmatite. These are narrow and run but short distances, their directions varying according to no apparent rule. 25 mineral species are found associated with them, many being pseudomorphs. The groupings of these minerals in the different veins are classified under 9 heads. The infillings of the granite veins are the result of the decomposition and falling in of the neighbouring rocks, brought about by water trickling from above: they are in no wise eruptive or due to hot springs. G. A. L.

Cronquist, A. W. Ytterligare meddelande om leror och öfrig eldfast material från Stabbarps stenkolsgrufva i Skåne. [The clays and other non-combustible matter from the Stabbarps Coal-mine in Scania.] *Geol. fören. Stockholm Förh.* Bd. ii. no. 28, pp. 558-564.

A number of analyses are given.

Dana, Prof. J. D. Porphyry of the Island of Lambay, a few miles north of Dublin Bay. *Amer. Journ.* ser. 3, vol. ix. pp. 58, 59.

Note on the views of Prof. Hull (see GEOLOGICAL RECORD for 1874, p. 205). The writer thinks that the chlorite in this porphyry, which is regarded by Prof. Hull as introduced as a secondary product by the agency of water, "was made through the agency of water that gained admission from some subterranean source *when the melted rock was ascending to the surface.*" To the same cause are due the cavities of amygdaloidal rocks, and a large part of the zeolitic and other minerals with which they are filled. G. A. L.

——. Notice of the Chemical and Geological Essays of T. S. Hunt. *Amer. Journ.* ser. 3, vol. ix. pp. 102–109.

Chiefly a denial of the views attributed to him by Prof. Hunt. The writer has never held:—1, the possibility of converting almost any silicate into any other; 2, 3, 4, the possibility of converting granite, gneiss, or diorite into limestone; 5, 6, 7, 8, the possibility of converting granite, granulite, gneiss, or diorite into serpentine; 9, 10, the possibility of converting limestone into granite or gneiss. G. A. L.

——. Pseudomorphism and Metamorphism: a correction. *Amer. Journ.* ser. 3, vol. x. pp. 298–300.

Shows that the writer "*never* held that metamorphism is pseudomorphism on a large scale," except in special cases.

Delesse, Prof. A. Remarques sur le Granite et sur les Roches métamorphiques. [Remarks on Granite and on Metamorphic Rocks.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 154–159.

Criticises the theories of A. Knop and Von Lasaulx as to the formation of granite, gneiss, and crystalline schists. Thinks that the microscopical analysis of rocks, though most useful in throwing light on their intimate structure, has given rise to much fallacious geological reasoning, and quotes with approval De Saussure's saying that "mountains must not be studied with a microscope." G. A. L.

Doelter, Dr. C. Trachyte von der Insel Kos. [Trachyte of the Island of Cos.] *Verh. k.-k. geol. Reichs.* pp. 233, 234.

Specimens given for microscopical examination proved to be:—1, Rhyolite; 2, Augitic Andesite; 3, Trachyte.

——. [Rocks of Tyrol.] *N. Jahrb.* Heft i. pp. 46–49.

Letter announcing results of survey-work among the eruptive rocks of Fassa and Fleims. Concludes that all the eruptive rocks are of the same age, namely that of the augitic porphyry of the Seisser Alp, which may be referred to the period of the Wengen beds. No younger rocks have been observed. The syenite is the oldest of the eruptive rocks of Predazzo; then follows the granite, and next the great group of melaphyres and augitic porphyries; the youngest rock is the red porphyrite. Describes the rocks of Monzoni. F. W. R.

Doelter, Dr. C. Ueber die mineralogische Zusammensetzung der Melaphyre und Augitporphyre Südost-tirols. [Mineral Composition of S.E. Tyrol Melaphyres and Augite-porphyries.] *Min. Mitt.* Heft iv. pp. 289–308.

The melaphyres of S. E. Tyrol are classed as follows:—1. Augitic melaphyre: *a.* Augitic porphyry, or melaphyre rich in augite; *b.* Melaphyres poor in augite, and those containing augite and hornblende. 2. Hornblendic melaphyre. 3. Melaphyre free from augite and hornblende. Plagioclase forms the principal constituent; orthoclase occurs frequently; the other constituents are augite, uralite, hornblende, olivine, and magnetite, frequently titaniferous. As secondary formations there are calcite, epidote, delessite, and chalcedony. F. W. R.

Doelter, Dr. C., and **Dr. R. Hoernes.** Chemisch-genetische Betrachtungen über Dolomit. [Chemical Origin of Dolomite.] *Jahrb. k.-k. geol. Reichs.* Bd. xxv. Heft 3, pp. 293–332.

Treats first of the literature of former experiments and theories on dolomitization. Describes the S. Tyrolese Dolomites. Examples from many horizons in the Alpine Trias are described, with analyses. Some conclusions as to the genesis of dolomite are then drawn. Limestones poor in magnesia are held to have been probably formed direct by organic agency, as some living corals contain magnesia. Metamorphosis by later introduction of magnesia-carbonate could only affect some portions, and not large rock-masses. Rocks rich in magnesia possibly resulted from the action of magnesium-chloride on organically formed rock, soon after its deposition. The amount of magnesia may be concentrated by subsequent dissolving out of lime, which is more soluble in carbonated waters. E. B. T.

Durand-Claye, Léon. [Analyses of Limestone.] *Rev. Géol.* t. xii. pp. 47, 48.

Twelve analyses are given of four beds of limestone from the Lower Cretaceous of the Homme-d'Armes quarry, north of Montélimart (Drôme). Also eighteen analyses of limestone from Cruas (Ardèche), and the mean composition of limestones from three other quarries in the Rhône valley. G. A. L.

——. [Analysis of Limestone from Ablancourt (Marne).] *Rev. Géol.* t. xii. p. 50.

Five analyses given.

——. [Analysis of calcareous sand from Somma Bay.] *Ibid.* p. 56.

Ebray, Th. Quelques remarques sur les Granulites et les Minettes; nouvelle classification des roches éruptives. [Granulites and Minettes; New Classification of Eruptive Rocks.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 287–291.

Denounces the use of mineralogical terms applied to eruptive rocks in discussing geological questions. Proposes a classification of such rocks indicated by names based on the horizons of the beds cut through, as:—carbophyre, kohlephyre, triaphyre, juraphyre, etc. G. A. L.

Eck, André. Analyses of Chalk. *Rev. Géol.* t. xi. p. 46.

Gives the composition of hard chalk from Rilly and Verzy, and of soft chalk from Rheims. The last contains the least carbonate of lime.

Egleston, Prof. T. Analysis of Rocks. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 94–98.

Alludes to Cordier's mechanical analysis of rocks, and to Fouqué's partly mechanical and partly chemical process. The latter consists in reducing the rock to powder, separating the coarser parts from the fine powder by means of graduated sieves, and then separating those parts which contain iron by means of an electro-magnet. R. B. N.

Fellenberg, L. von. Analysen zweier Porphyre aus dem Maroggia-Tunnel im Tessin. [Analyses of two Porphyries from Maroggia Tunnel, Canton Tessin.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 422–429.

Fouqué, F. Dépôts salins des Laves de la dernière éruption de Santorin. [Saline Deposits in the Lavas of the last eruption at Santorin.] *Compt. Rend.* t. lxxx. pp. 832–834, with remarks by **Ch. Sainte-Claire Deville,** pp. 834–836.

Analyses are given; and each writer offers a theory as to the formation of the deposits.

Frazer, Prof. P. On Thin Sections of the Traps of the Mesozoic Basin. *Proc. Ac. Nat. Sci. Philadel.* pt. i. p. 72.

——. Notes on the character of the Lower Silurian Slate at their Outcrops. *Ibid.* p. 76.

——. On the Traps of the Mesozoic Sandstone in York and Adams Cos. *Proc. Amer. Phil. Soc.* vol. xiv. pp. 402–429.

——. Description of some Microscopic sections of Trap dykes in the Mesozoic Red Sandstone of Pennsylvania and Connecticut. *Ibid.* pp. 430–447.

——. On some thin Sections of the Lower Palæozoic and Mesozoic Rocks of Pennsylvania. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 327, 328.

Allusion made to the rare occurrence of syenite in the Red Sandstone.

Frickhinger, Hermann. Wenneberg-Lava aus dem Ries. [Lava from the Wenneberg.] *Verh. Würzb. phys.-med. Ges.* n. F., Bd. viii. Noticed in *N. Jahrb.* Heft iv. pp. 429–431.

Describes a stony lava from the Wenneberg, near Alerheim in the Ries, which has been variously named. It consists principally of a green fibrous mineral, believed to be hornblende, and contains granules of quartz with fluid-enclosures. An analysis is given. F. W. R.

Gümbel, Dr. C. W. [Wenneberg Lava.] *N. Jahrb.* Heft iv. pp. 391–393.

The rock described as Wenneberg lava is a basalt, rich in plagioclase, and much decomposed. Microscopic description given.

Gümbel, Dr. C. W. Der skandinavische Aschenregen gegen Ende März 1875. [Scandinavian Ash-rain of March 1875.] *Stuttgart.*

Hauer, Bergrath C. von. Analysen südtirolischer Gesteine. [Analyses of S. Tyrol Rocks.] *Verh. k.-k. geol. Reichs.* pp. 331–334.

Analyses of red orthoclase porphyry, from a dyke near Predazzo, and of hornblende-monzonite, which contains orthoclase and a triclinic felspar allied to Bytownite. E. B. T.

Hauer, C. Ritter von, und **John Conrad.** Arbeiten in dem chemischen Laboratorium der k.-k. geologischen Reichsanstalt. *Jahrb. k.-k. geol. Reichs.* Bd. xxv. Heft 2, pp. 141–206.

Results of work in the laboratory of the Vienna Geological Institute. Consists of analyses of graphites, coals, fire-clays, limestones, iron-ores, &c., from various parts of the empire. E. B. T.

Havrez, Prof. Paul. Coal. Its constituents, properties, heating power, and immediate sub-products. *Coll. Guard.* vol. xxx. pp. 371–373, 526, 561, 562, 607. (Liége Association of Engineers.)

A physical and chemical treatise, translated.

Hawes, George W. Contributions from the Sheffield Laboratory of Yale College. No. xxxii. The Trap Rocks of the Connecticut Valley. *Amer. Journ.* ser. 3, vol. ix. pp. 185–192.

Analyses are given of dolerites from 4 and of Diabase from 2 localities, both rocks coming from dykes cutting through Mesozoic sandstones. "There is a remarkable uniformity at all points in the ejected material, which seems to prove that, whether now anhydrous or chloritic, it must have had a common source, and this a deep-seated one." G. A. L.

Hayes, A. A. On the wide diffusion of Vanadium and its association with phosphorus in many rocks. *Chem. News,* vol. xxxi. pp. 166–168, vol. xxxii. pp. 34–36.

Maintains that "vanadium is as common a constituent of rocks as manganese." It usually occurs in association with phosphates; these the author finds in all clays, in lavas, trachytes, slates, shales, coal, felspars, and many other rocks and minerals. Vanadium compounds are found in certains waters. F. W. R.

Hilger, A. Ueber das Vorkommen des Lithiums in den Sedimentärgesteinen. [Occurrence of Lithium in Sedimentary Rocks.] *Ber. deutsch. chem. Ges.* 8 Jahrg. pp. 335, 336.

Announces the detection of lithium in Triassic rocks in the neighbourhood of Würzburg. The writer finds it in almost all members of the Lower and Upper Muschelkalk. He has also found lithium in the loess of the Niddathal in Upper Hesse. F. W. R.

Hofmann, Dr. K. Die Basalte des südlichen Bakony. [Basalts of S. Bakony.] *Jahrb. kön. ung. geol. Anst.* Bd. iii. Heft iii.

A description of the mineralogical constitution of the basalts treated of by Beudant in 1818, by the study of microscopical sections, of which diagrams are given on 3 coloured plates. In the second part the mode of the formation of the basalts and tufas is explained. J. S.

Hoppe-Seyler, F. Ueber die Bildung von Dolomit. [Formation of Dolomite.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 495–530; plate.

The author's experiments lead him to conclude that dolomite cannot be artificially produced at ordinary temperatures. He maintains that the magnesia was not derived from basaltic or other eruptive rocks, but from the sea. Submarine volcanic eruptions have raised the temperature sufficiently to admit of the formation of dolomite; but the magnesia required for the dolomitization of large masses of limestone was obtained from sea-water. F. W. R.

Hull, Prof. Edward. On the Microscopic Structure of a fragment of "Baked" or Indurated Slate, from the Lower Silurian Rocks, Claremont Hill, near Dundalk. *Journ. R. Geol. Soc. Ireland,* ser. 2, vol. iv. part 2, pp. 85–88; plate.

The specimen was from a dark grey, compact, hard splintery rock. Trap rocks abound in the neighbourhood; and the induration is attributed to a high temperature. Under the microscope the rock is seen to consist of a colourless glass with rounded and subangular grains of silica and grains of magnetite. An analysis by **Rev. S. Haughton** shows the presence of all substances needed to produce a glass, alkalies and lime being abundant. Thus the clay has been vitrified, the silica grains remaining almost unaltered. The metamorphism had begun to develop felspar, some little prisms of which are seen. An Appendix gives a note on the proportion of Magnetic Iron-ore in the specimen, by **Mr. E. T. Hardman**; and a letter from **Mr. G. J. Stoney** on the probable temperature at which the partial fusion took place. E. T. H.

——. Constituents of Leinster Granite. *Quart. Journ. Micr. Sci.* vol. xv. p. 102. (Dublin Micr. Club, 23 July, 1874.)

Contains an orthoclase and a plagioclase felspar, believed to be albite.

——. Composition of Vesuvian Lava. *Quart. Journ. Micr. Sci.* vol. xv. p. 330.

Notice of sections of lava exhibited at the Dublin Micr. Club.

Hunt, Dr. T. S. On the decayed Rocks of Hoosac Mountain. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 187, 188.

The rock in the tunnel through the mountain consists of mica-schist and micaceous gneiss, including in its W. half a mass of harder felspathic and quartzose strata, mostly dipping E. Complete decomposition W. was observed at the base of the mountain, the felspar being converted into white clay, and the mica much softened and disintegrated. The decomposition took place before the Drift period. R. B. N.

——. Prof. J. D. Dana on the Alteration of Rocks. *Proc. Boston Nat. Hist. Soc.* vol. xviii. pp. 108–111.

Kalkowsky, Dr. Ernst. Mikroskopische Untersuchung des Glimmertrapps von Metzdorf. [Mica-trap of Metzdorf.] *N. Jahrb.* Heft v. pp. 488–503.

A rock called mica-trap, occurring near Metzdorf in the gneiss district of the Saxon Erzgebirge, is described under 3 heads:—1. Its constituents—quartz, muscovite, biotite, a green mica, clastic particles, garnet, an unknown yellow mineral, and iron-ore; 2. Structure and varieties—granular, schistose, and spotted (*fleckig*); 3. Its enclosures: the results of microscopic examination show that the rock is an "altered grauwacke," and is improperly called a mica-trap. F. W. R.

Kalkowsky, Dr. Ernst. Rother Gneiss und Kalkstein im Wilischthal im Erzgebirge. [Red Gneiss and Limestone in the Wilischthal.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 623–630; woodcut.

The "red gneiss" of the Saxon Erzgebirge has been studied by many geologists, and is generally referred to an eruptive origin. The author describes a geological section showing the gneiss so intimately associated with limestone, that they must have been contemporaneous. But if this limestone is eruptive, then it is argued that all the Archæan series of the Erzgebrige must have had a like origin—a conclusion which cannot be maintained. Hence the alternative that the red gneiss of Saxony is not an eruptive rock. F. W. R.

Kern, Sergius. Coal in Russia. *Chem. News*, vol. xxxi. pp. 133, 134, and vol. xxxii. pp. 79, 80.

Part 1. 8 Analyses of Russian Coal, giving in each case the percentage of carbon, volatile matter, and ash, with calorific power, and in most cases the proportion of sulphur. The coals were from the Governments of Nowgorod, of Toula, and of Riasne, the Oural Mts., and the Donetz coal-fields. Part 2. Analyses of 10 samples of coal from the Governments of Toula, Kalouga, Ekaterinoslaw, and Simbirsk, and from the Caucasus and the Donetz coal-fields. F. W. R.

Kinahan, G. H. Microscopical Structure of Rocks. Report No. 1.—Ingenite Rocks. *Proc. R. Irish Acad.* ser. 2, vol. ii. (Science), part 2, pp. 95–101. No. 2, pp. 161–163, pl. 8. No. 3, pp. 164, 165. No. 4, part 3, pp. 180–182, pls. 7, 8; woodcuts.

No. 1. Premising that the granitic rocks of W. Connaught seem capable of being divided into *Intrusive Granite* (highly siliceous), *Non-intrusive Granite* (basic), and *Elvanyte*, the author describes his examination of specimens of the second group, from various places in Galway. The minerals determined in these are orthoclase, adularia, oligoclase, mica, quartz, amphibole, and pyrite.

No. 2. On the quartz contained in granites from Co. Galway. The appearances under the microscope are described.

No. 3. Describes the examination of granite from Carnsore Point, Co. Wexford. The mass of the rock is metamorphic; but in one place some that appeared to be intrusive occurs. It is of a reddish-grey colour, containing large crystals of pink felspar, together with white felspar, greenish felspar, two micas, quartz, and pyrite. It is sometimes distinctly foliated. Four slices were examined; and the details are given. The rock seems to belong to the Galway granite type, containing three felspars, orthoclase, adularia ?, and oligoclase.

No. 4. On Ingenite Rocks. Deals with an intrusive mass of granitic rock (elvanyte) at Longstone, Tipperary. Microscopical examination shows it to consist of a felspathic base, containing crystals of yellowish-green felspar, small blebs of quartz, and some mica. Figures are given showing the microscopic characteristics. E. T. H.

Kinahan, G. H. Granitic and other Ingenite Rocks of Yar Connaught, and the Lower Owle; or the mountainous tract of country west of Loughs Mark and Corrib. *Proc. R. Irish Acad.* ser. 2, vol. ii. (Science), no. 2, pp. 102–138, plates 9–12.

Part 1 refers to the different descriptions of rock, Plutonic, Metamorphic, and Granitic, with their occurrence, modifications, and gradations. Part 2 is occupied with suggestions as to the origin of the granitic and other Hypogene rocks. The non-intrusive hypogene rocks were formed from pre-existing rocks by heat, the granitic rocks having been more or less fused and liquified, others (as gneiss, &c.) being never fused or liquified, but changed by heat, in this case probably wet. The intrusive groups were probably the result of parts of underlying fluid magmas, either acid or basic, being forced into cracks and fissures by the weight of the overlying mass. The author considers granite mostly the result, not the cause, of metamorphism. E. T. H.

——. Sedimentary Basalt (Doleryte). *Sci. Goss.* no. 132, p. 279.

Notes thin-bedded Antrim dolerytes, which may be metamorphosed tuffs.

Koch, Dr. G. A. Geologische Mittheilungen aus der Oetzthaler Gruppe. [The Oetzthal Mts., &c.] *Jahrb. k.-k. geol. Reichs.* Bd. xxx. Heft 3, pp. 247–258. See also *Verh. k.-k. geol. Reichs.* pp. 123, 124.

Describes the rocks of the Pitzthal and Kaunserthal, mostly gneiss and crystalline schists. Notes on the minerals will follow.

Lang, H. O. Ueber die Absonderung des Kalkstein von Elliehausen bei Göttingen. [Structure of Limestone.] *Zeitsch. deutsch. geol. Ges.* Heft iv. pp. 842–853, with plate.

Describes the prismatic structure of certain limestones of the *Ceratite*-beds of Elliehausen, near Göttingen, and refers it to the effects of great lateral pressure. F. W. R.

——. Parallelfaserung und Säulen-Absonderung. Mikrostructur-Studie. [Fibrous and Columnar Structures.] *Jahresheft Ver. Nat. Württ.* Bd. xxxi. p. 336, plate. Abstract in *N. Jahrb.*

Gives the results of microscopic studies of certain minerals with fibrous structure, such as gypsum, and of prismatic basalt, undertaken with the view of determining whether the structure was due to increase of volume. Finds that this explanation holds only in certain cases, and concludes that the parallel fibres and the prismatic forms are generally the result of lateral compression during the formation of the substance. F. W. R.

Lang, H. O. Volcanic Ashes of Turrialba, Costa Rica. *Nachricht kön. Ges. Wiss.* und *G. A. Univ. Göttingen*, nos. 11–16. Noticed in *Nature*, July 15, p. 222.

Lasaulx, Prof. A. von. Elemente der Petrographie. Pp. viii, 488. 8vo. *Bonn.*

Commences with a description of the methods of investigation. Describes the rock-forming and commoner minerals. Gives an account of the various structures of rocks, both crystalline and clastic. Enters upon the classification of rocks, which he arranges primarily by their composition, whether composed of one or of more mineral substances, and subdivides according to their structure, whether crystalline, clastic, &c., giving a full description of each species and its principal varieties. T. G. B.

Lemberg, J. Ueber die Serpentine von Zöblitz, Greifendorf und Waldheim. [Serpentine of Zöblitz, &c.] *Zeitsch. deutsch. geol. Ges.* Heft iii. pp. 531–549; 2 woodcuts.

Contains a number of original analyses of Saxon Serpentines. The rock which has yielded the serpentine of Zöblitz and Greifendorf probably consisted of olivine, garnet, and hornblendic minerals. F. W. R.

Lévy, M. A. Michel. De quelques caractères microscopiques des roches anciennes acides, considérés dans leurs relations avec l'âge des éruptions. [Microscopic Characters of old Acid Rocks in relation to the Age of the Eruptions.] *Bull. Soc. Géol. France*, sér. 3, t. iii. pp. 199–236, pls. iv, v.

Describes the mineral composition of a considerable number of granites, elvans, granulites, and carboniferous porphyries (Porphyres anthracifères), which are classed under two heads—the granitoid porphyries occurring at the base of the Lower Coal Measures, and the black porphyries forming interbedded coulées in the lowest beds of the same series. F. R.

——. Sur les divers modes de structure des roches éruptives, étudiées au microscope. [Modes of Structure of Eruptive Rocks, studied microscopically.] *Compt. Rend.* t. lxxxi. pp. 820–822.

Lindström, Axel. Bidrag till kännedomen om sammansättningen hos några af de olika slagen af lera, och deras egenskap af jordförbättringsmedel. [The Classification of the different kinds of Clays, and their properties respecting the Improvement of Land.] *Geol. fören. Stockholm Förh.* Bd. ii. no. 26, pp. 473–483.

Macpherson, Joseph. Breves apuntes acerca del origen peridótico de la Serpentina de la Serrania de Ronda. [Notes on the Peridotic Origin of the Serpentine of the Ronda Mts.] *An. Soc. Españ. Hist. Nat.* vol. iv. part 1, 18 pp., 2 pls.

Maintains the peridotic origin of serpentine, the genesis of which is explained by one fourth of the base of the primitive rock having been replaced by two molecules of water. Ten microscopical sections of rocks from the Ronda mountains show their gradual transition to serpentine. J. McP.

Malet, H. P. Basalt. *Sci. Gos.* no. 130, p. 233.

Mello, Rev. J. M. On the Microscopical Structure of Rocks. *Pop. Sci. Rev.* vol. xiv. pp. 1–19 ; 2 plates.

Notes the history of the subject, and refers to its geological bearings, describes the characters of various minerals in detail, and concludes with notes on the microscopical characters of various sedimentary rocks. W. T.

Möhl [Prof.] H. [Minette of the Plauen'sche Grund.] *N. Jahrb.* Heft ii. pp. 176–179.

Describes the microscopic structure of sections from the middle of a vein in the Plauen'sche Grund, near Dresden. They show hornblende, mica, felspar (either orthoclase or plagioclase), magnetite, titanoferrite, an amorphous glass, and apatite. F. W. R.

——. Mikromineralogische Mittheilungen. *N. Jahrb.* Heft vii. pp. 691–724.

Notes on the hornblende-andesite of Jakuben, near Tetschen; on Tschermak's teschenite; on the olivine-rocks of Ellgoth; on hornblende-rock from Karnberg in Saxony; on the garnet-bearing quartz-diorite of Wolfach in Odenwald; on the diabase of the Bilstein, and the products of its alteration; on the augite-porphyry of Ratzes; on glassy hauyne-basalt or hauyne-tachylite, and on the felspar-basalts of Otaheite. F. W. R.

——. [Eruptive rocks of Ilfeld and Ilmenau.] *N. Jahrb.* Heft vii. pp. 725–729.

Preliminary notice of the microscopic characters of so-called melaphyres, minettes, and porphyrites from the neighbourhood of Ilfeld and Ilmenau, where the writer has collected more than 400 specimens for microscopic study. F. W. R.

Moissenet, Prof. [Analysis of Rock from Pontaven, Finistère.] *Rev. Géol.* t. xii. p. 45.

Composition: Quartzose sand 41; FeO 1; CaO 30·6; MgO 0·6; loss 26. Total 99·2.

Moissenet, Prof., and Assistants. [Analyses of Limestones.] *Rev. Géol.* t. xii. pp. 49, 50.

The limestones analyzed are from Sainte-Foy-la-Grande, Gironde, and Chalonvillars, near Belfort, Doubs.

Nathorst, A. G. Om en gångformigt uppträdande, euritlik bergart. [On a vein-forming euritic rock.] *Geol. fören. Stockholm Förh.* Bd. ii. pp. 215–218; plate.

Occurs, with pegmatite, in veins through light-red gneiss at Lindholm.

Neminar, Edmund F. Ueber die Entstehungsweise der Zellenkalke und verwandter Gebilde. [Origin of cellular Limestones, &c.] *Min. Mitt.* Heft iv. pp. 251–282; 3 woodcuts.

Concludes that cellular limestones are secondary formations produced by the action of meteoric waters on limestone, and are not characteristic of any geological formation. Two groups are recognized —limestones with even-faced crystalline walls to the cavities, and those with quite irregular hollows. The powdery matter sometimes found in the cells may be normal dolomite or marl, according to the composition of the original limestone. A cellular limestone is never reconverted into a compact rock by further action of water. F. W. R.

Newton, E. T. On Tasmanite and Australian White Coal. *Geol. Mag.* dec. ii. vol. ii. p. 336–342; plate 10.

Gives analyses and discusses the origin of these coals. Concludes that the first and probably the second also are true coals in process of formation, though of inferior quality. T. G. B.

Niedzwiedzki, Julian. Ueber Gesteine von der Insel Samothrake. [Rocks of Samothrace.] *Min. Mitt.* Heft ii. pp. 89–108.

Herr Hörnes, who accompanied the archæological expedition to Samothrace in 1873, described the geology of the island (see Geological Record for 1874, p. 73), and handed his rock-specimens for microscopic study to the writer, whose essay forms a supplement to Hörnes's memoir. The rocks described are granite, quartz-trachytes, biotite-trachyte, basalt, and gabbro. F. W. R.

Pettersen, K. De gneis-granitiske dannelser langs det nordlige Norges kystströg. [The Gneiss-granite on the N. Coast of Norway.] *Geol. fören. Stockholm Förh.* Bd. ii. pp. 450–468; plate.

Pichler, Prof. Adolf. Beiträge zur Geognosie Tirols. [Geology of the Tyrol.] *N. Jahrb.* Heft ix. pp. 926–936.

Proposes to distinguish several Tyrolese rocks by local names. *Töllite*, a dioritic porphyry from the Töll, near Meran; *Vintlite*, a quartz-hornblende porphyrite from Vintl; and *Ehrwaldite*, a Jurassic augite-porphyry from Ehrwald. [For rest, see Geology, p. 91.] F. W. R.

Piquet, A. Argile en filons. [Clay in veins.] *Rev. Géol.* t. xi. pp. 50, 51.

Gives analysis of white clay from Pancorvo, Province of Burgos, which forms a kind of vein running partly with and partly across the strike of the Cretaceous limestones of the district. Red hematite and spathose iron are associated with it. G. A. L.

Plant, F. On the Origin of some Arenaceous Nodules in Coal measure Sandstone. *Trans. Manch. Geol. Soc.* vol. xiii. part. x. pp. 338–340.

The surfaces of small nodules in sandstones are covered with ridges, as if roughly turned in a lathe. The rings are thought to be due to slow oxidation of stray particles of iron diffused in a series of gradually enlarging circles. C. E. De R.

Porte, —. Section of Coal with embedded Crystals. *Quart. Journ. Micr. Sci.* vol. xv. p. 331.

Notice of a section of Derbyshire coal which contained a seam of crystalline substance.

Quiroga y Rodriguez, Francisco. El microscopio en litologia. [The Microscope in Lithology.] *An. Soc. Españ. Hist. Nat.* vol. iv. part 3.

Urges the importance of microscopical analysis in lithology.

——. Excursion al Escorial. [Excursion to the Escurial.] *An. Soc. Españ. Hist. Nat.* vol. iv. part 3.

Gives results of microscopical analysis of rocks from the neighbourhood.

Rath, G. vom. Beiträge zur Petrographie. [Contributions to Petrography.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 295–416; 2 plates, 13 woodcuts.

Describes:—I. some rocks from the Andes, with special reference to the triclinic felspars which they contain; these rocks include the spherolite-lava of Antisana, the dacite of Mojanda, and the andesites of Pululagua, Guagua Pichincha, Tunguragua, and Toluca; also the obsidian-like andesite of Conejos in Colorado, the trachyte of Perlenhardt in the Siebengebirge, and the hauyne-lava of Palma in the Canary Islands. II. The rocks of Monzoni; these are referred to two types described provisionally as augite-syenite and diabase; the syenite is a peculiar variety containing orthoclase, plagioclase, and augite; the diabase is also peculiar, consisting of labradorite, orthoclase, augite, magnesia-mica, hornblende, titanite, magnetite, and pyrite. The Monzoni minerals are fully described; there is also a description of the melaphyre-dyke of Canzacoli, near Predazzo. III. On a remarkable basalt-dyke near Tannbergsthal in the Saxon Voigtland. An appendix describes the white ashes of Vulcano ejected on Sept. 7, 1873. F. W. R.

—— [Fall of Ashes in Norway.] *N. Jahrb.* Heft v. pp. 506–517.

Notes on a shower of volcanic ashes which fell in Norway on March 30, 1875, and on recent volcanic eruptions in Iceland, whence the ashes were derived. Analyses of the ashes cited. F. W. R.

Renard, [Prof. A.]. [Rocks of Belgium.] *N. Jahrb.* Heft i. pp. 44–46; 3 woodcuts.

There are two large "*massives*" of quartziferous diorite in the Silurian rocks of Brabant, at Lessinet and at Quenast; gabbro at Hozemont and near Grand Pré; some points of quartzose eurite; about ten occurrences of arkose, regarded by Dumont as eruptive; and porphyroidal rocks, some of which the author regards as porphyritic varieties of sericite-schist, and therefore of clastic origin. F. W. R.

Rivière, A. Note sur des apparences de formation sédimentaires que présentent les roches granitiques employées au dallage des trottoirs de Paris. [Sedimentary Appearances in Granitic Rocks.] *Compt. Rend.* t. lxxx. pp. 1448, 1449.

These appearances do not invalidate the theory of the igneous origin of these rocks.

——. Sur les époques d'apparition du porphyre quartzifère, de l'eurite serpentineuse et de leurs roches dépendantes et accidentelles. [The dates of appearance of quartziferous porphyry, serpentinous eurite, and their associated rocks.] *Compt. Rend.* t. lxxxi. p. 38. (Short abstract.)

Rosenbusch, H. [Vitreous Basalt.] *N. Jahrb.* Heft viii. p. 855.

Calls attention to the resemblance between the Finnland substances, called Sordawalite and Wichtisite, and the vitreous variety of basalt known as Hyalomelane. F. W. R.

Rudler, F. W. Basalt. *Sci. Gos.* no. 128, p. 188.

An answer to Mr. H. P. Malet.

Rutot, A. Note sur la formation des concrétions appelées grès fistuleux et Tubulations sableuses contenues dans l'étage bruxellien des environs de Bruxelles. [Formation of Concretions in the Bruxellian near Brussels.] *Ann. Soc. Géol. Belg.* t. ii. *Mémoires*, p. 6–11.

Shows that the fistulous grit concretions are due to the sponge *Stelleta discoidea*, and the sandy tubules to *Dysidea ? tubulata.*

Sacher, E. Ueber das Erstarren geschmolzener Kugeln in einem flüssigen Medium. [On solidification of molten balls in a fluid medium.] *Verh. k.-k. geol. Reichs.* pp. 260–264.

Relates experiments on paraffin allowed to solidify between warm and cold layers of spirit—supposed to be analogous to the solidification of cosmical bodies. E. B. T.

Scheurer-Kestner, M. A., and C. Meunier-Dollfus. [Calorimetric Trials and Analyses of Coals and Lignites.] *Bull. Soc. Indust. Mulhouse*, June. (Abstract in *Proc. Inst. Civ. Eng.* vol. xliii. p. 289.)

12 samples of coals (2 English) and 7 samples of lignite were tried. Details of analyses and results are given.

Schlæsing, T. Détermination de l'argile dans la terre arable. [Determination of Clay in Arable Lands.] *Compt. Rend.* t. lxxviii. pp. 1276–1279.

Detailed description of a new method of soil analysis.

Schondorff, Dr. A. Koksausbeute und Backfähigkeit der Steinkohlen des Saarbeckens. [The Coking Properties and Yield of the Coals of the Saar Basin.] *Zeitsch. Berg- Hutt. Salinenw.* Bd. xxiii. pp. 135–162.

Contains the results of 282 experiments upon the coking qualities of the Saarbrücken coals. Finds that in these generally the amount of hygroscopic water diminishes, while the proportion of so-called fixed carbon as well as the capacity for making good coke increases, with the age of the seams, those contained in the lower measures being the most valuable gas and coking coals. The classification proposed by Hilt and Gruner, where the yield of coke is taken as the measure of the other qualities of a coal, is shown not to be applicable to the district under review. The second part treats of the physical structure of the coals and their relative coking quality, concluding with speculations on the nature of the changes undergone by woody tissue in its conversion into coal. H. B.

Schweitzer, Prof. P. On the Composition of Coal and on the methods of arriving at it, with deductions and remarks on Coal in general; illustrated on a sample of Coal from the Lower Coal Series of Missouri, and on the Water Supply of Columbia, Missouri. Contributed from the Laboratory of the University of Missouri, pp. 156–193, published in the Catalogue of the University, *Jefferson City*.

Skey, William. Notes on the Formation and Constitution of Torbanite. *Chem. News*, vol. xxxi. pp. 16, 17.

Experiments show that clay can absorb the colouring-matter of petroleum passing through it. If the process be carried on to a small extent we obtain only a feebly bituminous clay; but if carried to saturation of the clay the resulting substance resembles torbanite. The absorption is not of a mechanical but chemical nature. The author believes that torbanite is a combination of a bituminous substance with the clay; therefore not a coal, but probably a chemical combination of an acid hydrocarbon with silicate of alumina. F. W. R.

Snelus, G. J. Fire-Clay and other Refractory Materials. Iron and Steel Institute. *Iron*, vol. vi. pp. 422, 423.

Analyses given of clays, gannister, &c.

Streng, A. [Porphyrite of Ilfeld]. *N. Jahrb.* Heft vi. p. 624.

This rock consists of a compact matrix composed of orthoclase, oligoclase, hornblende, quartz, magnetite, and apatite, with porphyritic enclosures of triclinic felspar, hornblende, titanic iron, magnetite, and quartz, sometimes with graphite, garnet, &c. F. W. R.

——. Mikroskopische Untersuchung der Porphyrite von Ilfeld. [Porphyrite of Ilfeld.] *N. Jahrb.* Heft viii. pp. 785–811; woodcut.

The porphyrite of Ilfeld consists of an apparently compact matrix of orthoclase, lime-soda felspar, hornblende, quartz, magnetite, apatite, and sometimes graphite, perhaps also titanic iron-ore. In this matrix are porphyritically embedded crystals of lime-soda felspar, hornblende, quartz, and perhaps graphite and magnetite. The Ilfeld rock thus resembles the porphyrites of the Nahe district; they form a well-characterized group of rocks which stand between the quartz-porphyries and melaphyres. F. W. R.

Studer, Herr B. Die Porphyre des Luganer Sees. [Porphyries of the Lake of Lugano.] *Zeitsch. deutsch. geol. Ges.* Heft ii. pp. 417–421. Translated in *Boll. R. Com. Geol. Ital.* pp. 372–378.

No two rocks appear to be more distinct petrologically than the red and black porphyries of Lugano. Yet fresh specimens from the tunnel near Maroggia, on the Gotthard railway, have yielded very similar results, regard being had to the presence of free quartz in the red and of magnetite in the black rock. The analyses are given. F. W. R.

Szabó, Prof. J. I. A trachyt Képles Szászka Környékén. II. Uj-Moldova némely eruptiv Krystályos Közete. [I. The trachytic formation in the environs of Szászka. II. On some eruptive crystalline rocks of Uj-Moldova.] *Földtani Közlöny V. K. Budapest.*

In the S.E. of Hungary (Banat) many kinds of eruptive rocks occur, united by Cotta under the name of "Banatite," by Von Hauer of Syenite. The author finds that those of Szápka and Uj-Moldova are chiefly andesine quartz-trachytes with granitic structure, very similar to those in Transylvania in the valley of Körös, which have been called by Stache Dacites. At Uj-Moldova a basalt is found in the midst of this trachyte forming two dykes. Its mineralogical constitution is remarkable; it contains no felspar, but a great quantity of microscopic augite-magnetite, microscopic black mica, some amphibole and olivine. The base is a zeolitic mineral, especially Thomsonite; hence the author calls it a Thomsonite basalt. Nearly 50 p. c. of this rock is soluble in hydrochloric acid. Analcime and calcite occur in cavities as secondary products. J. S.

Törnebohm, A. E. Mikroskopiska bergartstudier. [Microscopical Rock Studies.] *Geol. fören. Stockholm Förh.* Bd. ii. pp. 322, 329, 393-401, 431-437.

i. On the Rhombic porphyry (Rhombporfyren) near Kristiania. ii. On some amorphous traps (from the Samuel-Anders mine: from Floda parish Dalecarlia; from S. of Torsåkers church, Södermanland; and *Sordavalite* from Sordavala, in Finland.) iii. Phonolite from Elfdal. G. A. L.

Tschermak, G. Felsarten aus dem Kaukasus. [Rocks from the Caucasus.] *Min. Mitt.* Heft iii. p. 22.

Describes eruptive rocks collected by E. Favre during his second journey through the Caucasus. Some are from eruptions between sandstones and slates referred to the Lias and L. Oolites; these rocks are diabase and porphyries. Others from outbursts through the slates, and are associated with Neocomian beds, which they appear in places to have disturbed; these are melaphyres and augitic porphyries, also orthoclase-porphyry. F. W. R.

Ward, J. C. Notes on the Comparative Microscopic Rock-Structure of some Ancient and Modern Volcanic Rocks. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 388–422, pls. xvii., xviii.

Part 1 gives an account of the literature of the subject; part 2 describes some modern volcanic rocks from Naples and Vesuvius; part 3 describes the volcanic rocks of Wales; part 4 those of Cumberland. The general results, especially of parts 3 and 4, are:—1. The microscopic examination of rocks teaches us much of the conditions under which volcanic rocks originated; 2. The older volcanic rocks are intensely altered, their original structure in *some* cases being probably obliterated; 3. The Silurian lavas of Wales belong to the felstone (= modern trachytic) group; 4. The Silurian lavas of Cumberland belong to the basaltic group, or stand somewhere between it and that of the felstones; 5. In Wales and Cumberland felspathic ashes have been metamorphosed into felstone-like rocks; 6. Neither the inspection of hand-specimens nor the microscopic examination of slices would in all cases enable us to discriminate between trap and altered ash-rocks; but these methods, and chemical analysis, must be accompanied often by a detailed survey of the rocks, the various beds being traced out, and their weathered surfaces particularly noticed. W. T.

Warden, C. J. H. Analysis of Mud taken at low water from the Mer Rouge, Mauritius. *Chem. News*, vol. xxxi. p. 274.

Weigand, Bruno. Die Serpentine der Vogesen. [Serpentines of the Vosges.] *Min. Mitt.* Heft iii. pp. 183–206, 2 figs.

Sketches the history of opinion on the origin of serpentine. The rock occurs in three districts in the Vosges, of which two are on the German side, in Upper Alsace, at the Bluttenberg or Bressoir in the N., and at the Amarinerthal in the S. These two occurrences are described. The writer concludes that not only can olivine be altered into serpentine, but other magnesian silicates, poor in alumina, as bronzite and hornblende, can also give rise to this stable hydrate as a product of their decomposition. F. W. R.

Wichmann, Dr. A. [Nepheline-basalt from the Sandwich Islands.] *N. Jahrb.* Heft ii. pp. 172, 173.

Describes the microscopic structure of a basalt brought to Hamburg as ballast from Oahu in the Sandwich Islands. It contains beautifully formed crystals of nepheline, with melilite, nosean, hauyne, and olivine. F. W. R.

——. [Melaphyre of the Plauen'sche Grund.] *N. Jahrb.* Heft vi. pp. 623, 624.

Haarmann has suggested that the so-called melaphyre of the Plauen'sche Grund, near Dresden, is properly a minette. The writer objects, maintaining that it is an augite-and-plagioclase rock with olivine, thus quite different from minette. F. W. R.

Wiik, F. J. Mineralogiska och petrografiska meddelanden. [Mineralogical and Petrographical Communications.] 8vo.

Contains the results of the author's microscopic study of certain rocks of Finland. The rocks are gabbros, diabases, and diorites. Several minerals are also described. [See MINERALOGY.] Finds that many of the rocks previously regarded as hypersthenite contain no hypersthene; some are olivine-diabase, others olivine-gabbro. F. W. R.

Woldřich, Prof. Dr. J. Künstliche Granit und Basalt-schlacken aus Böhmen. [Artificial Granite and Basalt from Bohemia.] *Verh. k.-k. geol. Reichs*, pp. 80, 81.

Notice of vitrified forts: in one of granite the blocks are glazed superficially and sometimes fused: the second at Vladař of basalt shows the melted rocks to have flowed in places over the unmelted; pieces of charcoal are enclosed in the fused stone. E. B. T.

Zickendrath, Ernst. Der Kersantit von Langenschwalbach in Nassau. [The Kersantite of Langenschwalbach.] Pp. 32. 8vo. *Würtzburg.*

Describes the rock petrographically, microscopically, and chemically, and gives his methods of analysis in detail. Shows that kersantite in a fresh state consists of oligoclase and mica, with a little augite, quartz, apatite, and magnetite. As products of decomposition it contains pyrites, melanolite, and various carbonates. Kersantite belongs to the older eruptive rocks; it occurs in the Lower Devonians of Nassau and in the Hundsrück, in Silurians near Brest, and in gneiss in the Vosges. Chemically it stands close to the minette of the Odenwald. No essential difference exists between kersantite and kersanton; hence the latter name should be abolished. F. W. R.

Zirkel, Dr. F. [Shower of Volcanic Ashes in Norway.] *N. Jahrb.* Heft iv. pp. 399-401.

The shower of volcanic ashes which fell in Norway on March 29 and 30, 1875, is supposed to have been blown over from Iceland. Specimens were collected from the snow in Söndmön. The author describes their microscopic characters. F. W. R.

——. Die Struktur der Variolite. [Structure of Variolite.] *Ber. k. sächs. Ges. Wiss.* p. 210.

——. Ueber die Zusammensetzung des Kersanton. [Composition of Kersanton.] *Ber. k. sächs. Ges. Wiss.*

See also:—

Abich, Prof. H. Quartz-trachyte, Caucasus: p. 47.

Anon. Columnar Basaltic Rocks, Staffordshire: p. 2.

Botti, U. Serpentine Conglomerate: p. 52.

Brögger, W. C. Occurrence of Apatite in Norway: p. 53.

Carne, E. T. Land's-End Granite: p. 8.
Cook, G. H. Analyses, New Jersey: p. 116.
Davies, D. C. The Phosphorite Deposits of North Wales: p. 11.
Doelter, Dr. C. Volcanic Rocks, Ponza, and Monzoni Rocks: p. 59.
Du Noyer, G. V., &c. Irish Rocks: p. 12.
Endlich, Dr. F. M. Rocks of San Juan Country: p. 119.
Fulton, J. Analyses of Coal, &c., N. America: *post*, ADDENDA.
George, J. R. Analysis of Magnesian Limestone, Missouri: *post*, ADDENDA.
Greenwell, G. C. Basalt and its effects: p. 15.
Homer, C. J. Analyses of Coals and Ironstones: p. 21.
Hudleston, W. H. Charnwood Forest Rocks: p. 21.
——. Analyses of Welsh Rocks: see **Hicks**; p. 19.
Hull, Prof. E. Rocks of Burnley Coal Field: p. 22.
Hunt, Dr. T. S. Chemical and Geological Essays: *post*, GENERAL, &c.
Johnson, J. Analyses of Coal, Illinois: *post*, ADDENDA.
Judd, J. W. Contributions to the Study of Volcanoes: p. 173.
——. Analyses of Iron-ores, in Memoir on Rutland: p. 25.
Kalkowsky, E. Salite as a Rock-constituent: p. 245.
Kjerulf, Prof. T. Rocks of Diocese of Trondhjem: p. 75.
Landerer, J. J. Origin of Granite and Limestone: p. 195.
Malaise, Prof. C. Belgian Porphyritic Rocks: p. 81.
Medlicott, H. B. Trap Dykes in Shápur Coal-field: p. 139.
Nesterowsky, —. Rocks of Salaïr, Altai: p. 140.
Neyt, P. J. Analyses of Alluvial Clays, Zealand: *post*, ADDENDA.
Orton, Prof. J. Rocks of Amazon Valley: p. 127.
Pechin, E. C. Analyses of Limestone, Pennsylvania: *post*, ADDENDA.
Pettersen, K. Rocks of N. Norway: p. 90.
Phillips, J. A. Cornish Rocks: p. 34.
Prime, F. Analyses of Slate: p. 128.
Pumpelly, Prof. R. Sections of chloritic schist: p. 254.
Raymond, A. W. Anthracite of New Mexico: p. 128.
Rink, Dr. H., &c. Rocks of Greenland (Arctic Manual): p. 112.
Smith, Dr. E. A. Analyses of various Rocks, Alabama: p. 130.
Smyth, W. W. Metallic Ores with Garnet Rock: p. 37.
Stache, Dr. G. Eruptive Rocks of Ortler district: p. 98.
Topley, W. Various Analyses: the Geology of the Weald: p. 40.
Trail, W. A. Igneous Rocks in the Co. Down: p. 41.
Ulrich, J. H. F. Rocks of Victoria: p. 163.
Verbeek, R. D. Sumatra, Description of Rocks: p. 168.
Ward, J. C. Granite and Metamorphic Rocks, Lake District: p. 42.
Wiik, —. Rocks of S. Finland: p. 107.

METEORITES.

Anon. The Disco Iron Blocks. *Iron*, vol. vi. p. 552.

Notice of Meteorites in the Paris Geographical Exhibition (from *La Nature*).

Drasche, Dr. Reichard von. Ueber den Meteoriten von Lancé. [The Lancé Meteorite.] *Min. Mitt.* Heft i. pp. 1–8 ; 4 plates.

This meteorite was seen to fall near Lancé, Canton of St. Amand (Dép. Loire-et-Cher), on July 23, 1872. It was broken by the fall into 3 fragments. 5 smaller meteorites belonging to the same fall have since been found. The structure of the Lancé stone is chondritic. The globules are white, dark grey, or black; a great number of white granules of olivine are present, and particles with metallic lustre are found in the tufaceous matrix. The microscopic structure of the stone is described in detail. Many of the globules are supposed to consist principally of olivine ; others, with a finely fibrous excentric structure, appear to be bronzite. Numerous isolated crystals of olivine, and here and there bronzite crystals, are distributed through the ground-mass ; magnetic pyrites and iron are common in all parts of the stone. A chemical analysis by M. Daubrée is cited from the *Compt. Rend.*, August 1872. F. W. R.

Flight, Dr. Walter. A chapter in the History of Meteorites. *Geol. Mag.* dec. ii. vol. ii. pp. 16–30, 70–80, 115–123, 152–163, 214–226, 257–267, 311–323, 362–372, 401–412, 497–504, 548–560, 589–608 ; plates iv., ix., xi., 3 woodcuts.

Part I. Gives a description of all meteoric bodies that have been found or known to fall since Jan. 1, 1869, describing their chemical and physical characters, their ingredient minerals where determined, and any important phenomena accompanying descent. This extends to p. 269, the last fall described dating April 4, 1875. About 49 cases are examined and described, some briefly, some at length. Part II. Gives a digest of memoirs and notices published from 1869–1875 inclusive, referring to meteorites seen to fall or found prior to Jan. 1, 1869, with such facts of history, investigations, and analyses as can be obtained. Contains many references. T. G. B.

Gümbel, C. W. Ueber die Beschaffenheit des Steinmeteoriten vom Fall am 12. Feb., 1875, in der Grafschaft Iowa, N. A. [Constitution of the Meteorite of the fall on Feb. 12, 1875, in Iowa Co., N. A.] *Sitz. math.-phys. Classe k. bay. Ak. Wiss.* Bd. v. pp. 313–330.

This iron fell on Aug. 1, 1835, but has not been fully described. It is of elongated kidney-shape ; and the bright metal is exposed on parts of the surface. This has not rusted; and the iron when cut and polished resists the tarnishing effects of vapours in the laboratory. By heat or acid, Wiedmannstätian figures are developed, with Laphamite markings. Analysis gave:—iron, 91·15; nickel, 8·01; cobalt, 0·72; copper, 0·06; sp. gr. 7·717. At a red heat it absorbs 2·2 vols. of gas, consisting of:—hydrogen, 71·04; carbon monoxide, 15·03; carbon dioxide, 13·03. It is supposed that the meteorite was not sufficiently heated to fuse the surface of the metal. F. W. R.

Leonard, N. R. Iowa Co. Meteor and its Meteorites. *Amer. Journ.* vol. x. pp. 357–363.

Fell Feb. 12, 1875, in many fragments; over 500 lbs. weight collected. Sp. gr.=3·57. Consisted of troilite 5·82, nickeliferous iron 12·54, stony matter 81·64. The last consists of about 54 p. c. olivine (approaching hyalosiderite), 46 p. c. pyroxene. The path is fully described. T. G. B.

Maskelyne, Prof. W. S. Some Lecture Notes on Meteorites. *Nature*, vol. xii. pp. 485, 504, 520.

Pp. 485–487 describe phenomena attending several falls of meteorites in the present century; the appearance of the exterior of such stones, and the probable cause of the same. Pp. 504–507 describe their chemical and mineral composition. They are crystalline throughout, and their minerals are commonly aggregated in small sphericles (chrondritic structure). The minerals usually present are tabulated. Pp. 520–523 discusses some theoretical considerations. T. G. B.

Meunier, Stan. Remarques relatives à un Mémoire de M. Tschermak sur la géologie des météorites. [Observations on a paper of M. Tschermak's on the Geology of Meteorites.] *Compt. Rend.* t. lxxxi. pp. 1278, 1279.

Note claiming priority in noticing several points common to meteorites and terrestrial rock-masses.

Mohr, Dr. Ueber die Natur und Entstehungsart der Meteoriten. [Nature and Origin of Meteorites.] *Liebig's Annalen*, Bd. 179, pp. 257-282.

Rath, G. vom. Die Meteoriten des naturhistorischen Museum de Universität Bonn. [The Meteorites of the Natural History Museum of the University of Bonn.] *Verh. nat. Ver. preuss. Rheinl.* 32 Jahrg. pp. 351-376.

Smith, J. Lawrence. A note in relation to the mass of Meteoric Iron that fell in Dickson Co., Tenn., in 1835. *Amer. Journ.* vol. x. pp. 349-352; *Chem. News*, vol. xxxii. pp. 221, 222.

The Iowa meteorite belongs to the most commonly occurring class of stones, known as *Chondrites*, or to Daubrée's section of *Sporadosiderites* in the group of *Oligosiderites*. The mass consists of irregular splinters of olivine and an augite-like substance. A felspathic constituent appears in subordinate quantity; and there are fragments of other minerals present. Mechanically rounded granules form an essential part of the substance of the stone; these are partly olivine, and partly lamellar growths of various minerals, or they consist of radiated fibrous masses. Granules of meteoric iron appear to have been formed subsequently by reduction. No vitreous or lava-like substances are present (except the crust); and the meteorite appears to be a clastic rock, and not to have been fused. F. W. R.

Smith, J. Lawrence. Description of the Nash County Meteorite which fell May 14, 1874. *Amer. Journ.* vol. x. pp. 147, 148.

Fell in fragments—exterior fused; contains 15·21 p. c. of nickeliferous iron and 84·79 of stony minerals. These were bronzite and olivine, the latter slightly predominating. T. G. B.

Tschermak, G. Die Trümmerstrucktur der Meteoriten von Orvinio und Chantonnay. [Structure of Meteorites of Orvinio and Chantonnay.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. i. Bd. lxx. pp. 459–472; 2 plates.

See Geological Record for 1874, p. 220. This paper should not have been entered in that volume, as it was not published in 1874.

——. Das Krystallgefüge des Eisens, insbesondere des Meteoreisens. [Crystallographic Structure of Meteoric Iron.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. i. Bd. lxx. pp. 443–458; plate and 3 woodcuts.

Cast iron shows octahedral and sometimes tesseral planes; some meteoric irons, *e. g.* Brunau (1847), show tesseral cleavage; the figures on etching with acid are due to lamellæ—planes of the triakisoctahedron. E. B. T.

——. La formazione delle meteorite e il vulcanismo. [Formation of Meteorites and Vulcanicity.] *Boll. R. Com. Geol. Ital.* vol. vi. pp. 381–392, stated to be a transl. from *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Bd. lxxi., where the paper is not to be found.

Gives a *résumé* of the conclusions respecting meteorites, which are considered to be formed by the collision of fragments ejected from bodies in the solar system. T. G. B.

Wright, A. W. Examination of the Gases from the Meteorite of Feb. 12, 1875. *Amer. Journ.* vol. x. pp. 44–49.

The meteorite was a 'stony' one in Iowa Co. The gases were CO_2, CO, H, and N—the first and third being in much larger quantities than the rest. T. G. B.

See also:—

Roscoe, Prof. H. E., Sir E. Sabine, and Dr. W. Flight. See Manual of the .... Geology .... of Greenland: pp. 111, 112.

MINERALOGY.

[In preparing abstracts of mineralogical papers it has been thought right to adhere as far as possible to whatever system of nomenclature, chemical notation, and crystallographic formulæ may have been used by the authors. No attempt has therefore been made to secure uniformity on these points. Where two or more symbolical expressions for the same thing have been used, the first has generally been taken. In some cases exceptions to the foregoing rules have been made to avoid typographical difficulties.]

Achiardi, Ant. d'. Sulla Cordierite nel Granito normale dell' Elba e sulle correlazioni delle Rocce granitiche con le trachitiche. [On Cordierite in the normal Granite of Elba, and on the Correlation of the Granitic and Trachytic Rocks.] 12 pp., *Pisa*; also *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft ii. pp. 462–464.

Announces the discovery of cordierite in a specimen of granite from Monte Capanne in Elba. The mineral occurs in dark brownish-green imperfect crystals, elongated in the direction of the vertical axis, and exhibiting principally the forms (3 1 0) and (0 1 0). Cordierite also occurs in the Tuscan trachytes; and the present discovery therefore furnishes another bond between the granitic and trachytic rocks, already known to have much in common. F. W. R.

——. Sulla Natrolite (Savite) e Analcima di Pomaja (Com. di Santa Luce). *Atti Soc. Tosc. Sci. Nat. Pisa*, vol. i. fasc. 1, pp. 67–69.

The same as the paper noticed in the GEOLOGICAL RECORD for 1874, p. 221.

Akerman, R. Relations of Titanium to Iron. *Iron*, vol. vi. p. 450.

Contains notices of Swedish iron-ores.

Andrews, Dr. T. On the Composition of an Inflammable Gas issuing from below the Silt-bed in Belfast. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 50, 51.

The same as the paper noticed in the GEOLOGICAL RECORD for 1874, p. 221.

Anon. [**G. H. Wollaston.**] Catalogue of the Minerals in the Clifton College Museum. *Trans. Clifton Coll. Sci. Soc.* vol. ii. pt. 1, pp. 55–72 (Appendix).

The formula and locality of each specimen are given; the greater part are British.

——. Rectificacion acerca del Descubrimiento de la nueva Especie mineral, llamada por el Sr. Petersen, Guadalcazarita. [Discovery of the New Mineral Species *Guadalcazarite*.] *Naturaleza*, t. iii. no. 12, pp. 235–238.

The Mineralogical Commission of the Mexican Society of Natural

History publishes a translation of an article by Dr. Burkart on the priority of discovery of the supposed new mineral species *Guadalcazarite*, and annexes a copy of Sr. Castillo's description which accompanied the specimens sent to Dr. Burkart for transmission to Prof. Rammelsberg for analysis. F. W. R.

Anon. Mineral Statistics for the year 1874. No. 2, pp. 56. *Melbourne*, fol. (with appendices).

In addition to the returns referring to Gold, information is given concerning the following metals and minerals:—*Silver*, *Tin*, *Copper*, *Antimony*, *Lead*, *Iron*, *Coal* and *Lignite*, and *Flags* and *Slates*. The results of a few analyses by **Mr. C. Newberry** of *Tin-sand*, *Stream-Tin ore*, *Black Sand*, *Copper* and *Antimony ores*, *Metallic Bismuth*, various ores of *Iron*, *Coal*, and infusorial earth are scattered through. The rare mineral *Maldonite* (Ulrich) is stated to occur throughout the richly auriferous quartz lode of the Eaglehawk line of reef, Maldon. R. E., Jun.

——. Metals in Victoria other than Gold. *Iron*, vol. vi. p. 198.

Amongst those mentioned the rarer are *Osmiridium*, *Gold* and *Silver Alloy*, at Sandhurst and St. Arnaud, *Zinc* in the Gold-drifts at Daylesford, and *Native Lead* in the "deep-leads" at Talbot and Avoca. The occurrence of *Platinum* is doubtful. R. E., Jun.

——. Use of the Microscope in Mineralogy. San Francisco Micr. Soc. Note in *Micr. Journ.* no. 14, pp. 257, 258.

——. Manufacture of Bessemer Steel at Neuberg, Styria. *Annales Industrielles*, June 20, 27, July 4. (Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 307, 308.)

The ores employed are from Altenburg and Bohnkogel. Analyses are given.

——. Fosforita de Estremadura. [Phosphorite of Estremadura.] *Rev. Min.* ser. B, t. i. p. 50.

——. Jade. *Journ. App. Sci.* vol. vi. p. 141.

Note of the occurrence of jade in clay in N. Burmah.

——. Platinum. *Ib.* p. 151.

Note of M. S. Dubos' exhibition of platinum in ophite, from the Pyrenees.

Atterberg, Alb. Tvenne pseudomorphoser från Kårarfvet. [Two Pseudomorphs from Kårarfvet.] *Geol. Fören. Stockholm. Förh.* Bd. ii. pp. 402-407.

Analyses given.

Attwood, Melville. Composition of the Native Alloy of Gold and Silver in the Comstock Lode, Nevada. Abstract of paper read to the Micr. Soc. (*American*?) April 1874, *Amer. Journ.* ser. 3, vol. ix. p. 229.

Babanek, Franz. Zur Charakteristik einiger auf den Přibramer Erzgängen vorkommenden Mineralien. [Minerals from the Přibram Lodes.] *Min. Mitt.* Heft ii. pp. 75–88.

Describes the occurrence of smoky quartz, barytes, calcite, cerussite, wulfenite, pyrrhosiderite, lillite, antimony, antimonite, pyrostibnite, allemontite, steinmanite, boulangerite, jamesonite, heteromorphite, bournonite, polybasite, and diaphorite. F. W. R.

Baltzer, Dr. B. [Occurrence of Tridymite.] *Vierteljahrsschrift nat. Ges. Zürich,* 20 Jahrg. pp. 182–184; *Neue Züricher Zeit.* Jan. 13, 1875, No. 21; *N. Jahrb.* Heft iii. pp. 316, 317.

Gives a history of the discovery of tridymite; describes the eruption of Vulcano, on Sept. 7, 1873; calls attention to the new type of volcanic ash that was then ejected during 3 hours, and shows, from chemical analysis, spec. grav., and optical characters, that these ashes consisted of tridymite. Suggests that the tridymite was formed by the action of acid vapours on the rocks forming the walls of the crater; that this decomposition had been going on since the previous eruption, 87 years before; and that the tridymite which had thus been formed was ejected on the first violent explosion of gases, which was succeeded by the eruption of ordinary ashes. F. W. R.

Barcena, Mariano. Estudio Químico del Livingstonite. [Chemical Study of Livingstonite.] *Naturaleza,* t. iii. no. 9, pp. 172–175.

A recent analysis of *Livingstonite* gave:—sulphur, 29·08; antimony, 53·12; mercury, 14; and iron, 3·5 per cent. From this analysis the following formula may be deduced:—$4Sb^2S^3 + HgS + FeS^2$. The mineral occurs at Huitzuco in the State of Guerrero; where it is associated with carbonate and sulphate of lime, native sulphur, cinnabar, valentinite, and antimonite. F. W. R.

——. Notas sobre las Esferolitas de México. [Sphærolites of Mexico.] *Naturaleza,* t. iii. no. 10, pp. 190–194.

These *esferolitas* are concretionary bodies of globular and other forms, consisting apparently of a mixture of orthoclase-felspar with free silica. An analysis of one gave:—silica, 79·12; alumina, 12; potash and soda, 3·58; oxide of iron, 2·45; magnesia, 1·1; loss, 1·75. The concretions are found free in the superficial deposits near volcanic mountains, chiefly those of trachytic porphyries; others occur embedded in porphyry or obsidian, and are frequently found in cavities in the latter rock. F. W. R.

Barstow, Dr. W. Sulphurets: What they are, How Concentrated, How Assayed, and How Worked; with a chapter on the Blowpipe Assay of Minerals. Pp. 120. 12mo. *San Francisco & London.*

Bauer, M. [Optics and Mineralogy.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 949–955.

Contribution to a discussion with M. Des Cloiseaux as to the constancy of certain optical properties of minerals.

Baumhauer, H. Die Aetzfiguren des Magnesiaglimmers und des Epidots. [Erosion-figures on Magnesian Mica and Epidote.] *Sitz. math.-phys. Classe k. bay. Ak. Wiss.* pp. 99–105; 2 figs.

Hot concentrated sulphuric acid acting on magnesian mica etches three-sided figures, whilst a heated mixture of finely pulverized fluor-spar and sulphuric acid develops both three-sided and six-sided depressions; between these two forms all transitional stages may be observed. The rhombohedral nature of the mineral is thus confirmed. Fine crystals of epidote from Sulzbach were also etched. The erosion-figures vary on different faces. F. W. R.

——. Ueber die Aetzfiguren des Apatits und des Gypses. [Erosion-figures produced on Crystals of Apatite and Gypsum.] *Sitz. math.-phy. classe k. bay. Ak. Wiss.* pp. 169–177.

The figures produced on the faces of bright well-developed crystals of apatite from Sulzbach, by exposure to the action of slightly warmed hydrochloric acid for a few minutes, have been investigated, with the result of showing that such erosion takes place in a manner indicating a pyramidal hemihedral structure for the mineral. The same method was applied to gypsum, the etching being effected with caustic potash, the resulting crust of lime being dissolved off in weak hydrochloric acid. The author points out that the hemihedrism of quartz and iron-pyrites has already been made out in the same manner by Leydolt and Gustav Rose. H. B.

Berwerth, F. Stängeliger Ludwigit. [Columnar Ludwigite.] *Min. Mitt.* Heft i. p. 42.

Note on a columnar variety of Ludwigite from Morawitza in the Banat.

——. Ein neuer Fundort von Pharmakosiderit. [New Locality of Pharmacosiderite.] *Min. Mitt.* Heft ii. p. 109.

Describes specimens of pharmacosiderite from Königsberg near Schemnitz, the first locality in Hungary from which the species has been obtained. F. W. R.

——. Hyalith. *Min. Mitt.* Heft ii. p. 109.

Transparent colourless hyalite occurs at Königsberg near Schemnitz.

——. Serpentin von New Jersey. *Min. Mitt.* Heft ii. p. 110.

A pale green translucent noble serpentine from New Jersey, U. S., exhibited a yellowish white incrustation, which was supposed to be a product of decomposition, but was found on analysis to be merely a modification of serpentine. The analysis is given. F. W. R.

——. Salze von Königsberg in Ungarn. [Salts from Königsberg, Hungary.] *Min. Mitt.* Heft iv. pp. 310-312.

Analyses of two salts, reputed to be keramohalite, from Königsberg in Hungary. Both differ in composition from that species. One is evidently a mixture of different salts; the other appears to be a new salt: its formula is given as follows:—

$$(SO_3)_{16} \cdot (Al_2O_3)_3 \cdot (FeO)_6 \cdot (H_2O)_2 \cdot (Aq)_{104}.$$

F. W. R.

Bischof, F. Die Steinsalzwerke bei Stassfurt. [The Salt-works near Stassfurt.] Ed. 2. Map and plate. 8vo. *Halle.*

Brezina, Dr. Aristides. Das Wesen der Isomorphie und die Feldspathfrage. [Isomorphism and the Felspar Question.] *Min. Mitt.* Heft i. pp. 13–30, Heft iii. pp. 137–152, with fig.

The two parts here published deal with the theory of isomorphism.

Broadhead, G. C. Occurrence of Bitumen in Missouri. *Trans. Acad. Sci. St. Louis,* vol. iii. no. 2, pp. 224–226.

Gives the geographical distribution of bitumen in Missouri; the quantity seems to increase in going southwards. It occurs in Coal Measure sandstones and in Lower Carboniferous Limestone. Notes of borings are given. F. W. R.

Brown, Dr. R. On Magnetic Iron-Sand from shores of Lochfyne. *Proc. R. Phys. Soc. Edin.* Session 1874–75, p. 28.

Contains more iron than a similar sand from Bogamy Point, Rothesay Bay. A divergence of the compass is said by captains of small coasters to take place near the point where the principal deposit lies. R. E., Jun.

Brush, George J. Manual of Determinative Mineralogy; with an Introduction on Blow-pipe Analysis. Pp. iv, 104; 22 figs. 8vo. *New York.*

Describes the apparatus and reagents used in blowpipe-analysis; gives a systematic course of qualitative analysis; an alphabetical list of elements and compounds, with the most characteristic blowpipe and other reactions; and a series of tables for the determination of mineral species by means of simple chemical experiments in the wet and dry way, based on Von Kobell's well-known *Tafeln.* F. W. R.

Burkart, Doctor Jose. Exámen y Clasificacion de algunas Especies Minerales de Mexico. [Examination and Classification of some Mexican Minerals.] *Naturaleza,* t. iii. no. 13, pp. 248–253, no. 15, pp. 288–291.

Castillo, Antonio del. Noticias sobre los Criaderos de Grafita ó Plombagina de México, y su Explotacion. [Notes on Deposits of Mexican Graphite, and their working.] *Naturaleza,* t. iii. no. 14, pp. 275–281.

Church, Prof. A. H. Notes on the Specific Gravity of Precious Stones. *Geol. Mag.* dec. 2, vol. ii. pp. 320–323.

The stones are as follows (the figures in brackets being the numbers of specimens experimented on): Adularia (1), Beryl (4), Chrysoberyl (4), Chrysolite (2), Garnet (11), Quartz (9), Sapphire (3), Spinel (4), Topaz (11), Tourmaline (6), Zircon (15). W. T.

——. On the Composition of Autunite. *Journ. Chem. Soc.* pp. 109–112.

Contains 5 original analyses of Autunite, made on two French specimens from St. Symphone, and on one from the newly discovered locality in Cornwall. The last occurred in thin isolated sulphur-yellow rhombic tables. The author concludes that the unaltered native crystals contain:—$\left.\begin{matrix}U_2O_3\\CaO\end{matrix}\right\} P_2O_5 . 10\,H_2O$. But when dried *in vacuo* 8 molecules of water are lost, corresponding to 15·18 p. c. The author considers that drying minerals *in vacuo* may remove essential water and not accidental moisture only. The closely allied mineral Torbernite did not yield analogous results. F. W. R.

Church, Prof. A. H. Short Notices of some Cornish Minerals. *Chem. News*, vol. xxxi. p. 153.

Describes:—1. A pink variety of steatite, found on analysis to be a hydrated magnesium silicate represented by the formula $3MgO . H_2O . 4SiO_2$; 2. A nearly white crystalline mineral containing much water, some fluorine, and a good deal of silica and ferrous oxide, but not identified with any known species; 3. Analysis of native gold of Ladock; 4. Analysis of an old specimen of filiform native silver from Huel Herland. F. W. R.

Chydenius, J. J. Undersökning af fossilt hartz från Grönland. [Fossil Resin from Greenland.] *Geol. fören. Stockholm Förh.* Bd. ii. no. 27, pp. 549–551.

Analysis given.

Collins, J. H. Mineralogical Notices. *Journ. R. Inst. Cornwall*, no. xvi. pp. 50–52.

Mentions some new localities in Cornwall and Devon for garnets, axinite, fluor, jasper, toad's-eye tin, lithia-mica, carbonate of lead, pseudomorphs of cassiterite after bismuthite, and vivianite. An analysis is given of the garnets from Perranzabuloe. C. L. N. F.

——. Notes on a Cornish specimen of Wavellite. *Journ. R. Inst. Cornwall*, no. xvii. pp. 153; also *Chem. News*, vol. xxxii. p. 241.

Confirms the statement of Greg and Lettsom that Wavellite occurs at Stenna Gwyn, near St. Austell.

——. Crystallography. *Chem. News*, vol. xxxii. p. 248.

Partial reply to Mr. Readwin's queries, p. 255.

Cooke, [Prof.] Josiah P., Jun. Melanosiderite: a new mineral species from Mineral Hill, Delaware County, Pennsylvania. *Proc. Amer. Acad.* vol. x. pp. 451, 452.

Melanosiderite is a compact and amorphous mineral of striking black colour. H.=4·5. S.G.=3·39. Analysis leads to the formula: $4Fe_2O_3 . SiO_2 . 6H_2O$. It is clearly related to the sesquihydrates of iron, from which it differs notably in sp. gr. F. W. R.

Cooke, [Prof.] J. P., and F. A. Gooch. On Two New Varieties of Vermiculites, with a revision of the other members of this group. *Phil. Mag.* vol. 50, pp. 135–143; *Proc. Amer. Ac.* vol. x. pp. 453–462.

Two new varieties have been obtained since the publication of the last paper (see Geological Record for 1874, p. 227):—one from Lerni, Delaware Co., Pa.; the other from Pelham, Mass. Analyses of both are given. Concludes that all vermiculites are unisilicates; that they combine with water in several definite proportions; and that the only essential difference between the varieties is in the ratio between the sesquioxide and protoxide bases, since all vermiculites may be reduced to the condition expressed by the ratio 2 : 2 : 1 [atomic ratio, or oxygen ratio between the silica, the bases, and the water]. F. W. R.

Dana, Edward S. Second Appendix to the Fifth Edition of Dana's Mineralogy. Pp. x, 64. 8vo. *New York*.

Prepared, with the co-operation of Prof. J. D. Dana, to render the original work complete up to Jan. 1875. It therefore includes descriptions of all species announced as new within the preceding 7 years, excepting those which appeared in the first Appendix. A list of the more important recent mineralogical works is added. F. W. R.

——. Note on "Mineralogical Contributions, V., by **Prof. C. Klein,** in Heidelberg." *Amer. Journ.* ser. 3, vol. x. p. 61.

——. On the Chondrodite from the Tilly-Foster Iron Mine, Brewster, New York. *Amer. Journ.* ser. 3, vol. x. pp. 89–103; 3 plates, 2 figs. Also *Trans. Connecticut Ac. Sci.* vol. iii. pp. 67–69.

A crystallographic description of the chondrodite described by Prof. Dana. [See Geological Record for 1874, p. 228.] Chondrodite is identical with humite in chemical composition and crystalline form; but the humite crystals are of 3 types, whilst hitherto the chondrodite has been found of only one type. Mr. Dana now shows that the Tilly-Foster specimens represent all 3 types. The results of optical studies are given, and a chemical analysis of crystals of the second type. F. W. R.

Dana, Prof. J. D. Doubtful Minerals. *Chem. News*, vol. xxxi. pp. 160, 161.

Defends the use of the name chalcopyrite, and advocates nomenclature derived from classical sources.

Daubrée, [Prof.] Sur la formation contemporaine, dans la source thermale de Bourbonne-les-Bains (Haute-Marne), de diverses espèces minérales cristallisées, notamment du cuivre gris antimonial (Tétraédrite), de la pyrite de cuivre (Chalkopyrite), du cuivre panaché (Philippsite) et du cuivre sulfuré (Chalkosine). [The Recent Formation of Tetrahedrite, Chalkopyrite, Philippsite, and Chalkosite in the hot Spring of Bourbonne-les-Bains (Haute-Marne).] *Compt. Rend.* t. lxxx. pp. 461–469.

Roman coins and other objects in bronze, silver, and gold have been found in draining a Roman well (*puisard*) at the thermal springs of Bourbonne-les-Bains; and beneath these occurred a bed of fragments of rock cemented by crystallized compounds resembling natural minerals. They include:—*chalcosite*, in crystals like those of the copper-glance of Redruth; *copper-pyrites* both in octahedra and mamillated; *variegated copper-ore* in regular octahedra and cubes; and *antimonial grey*

copper-ore in regular tetrahedra. These minerals have been formed within 16 centuries, probably by the reducing action of vegetable matter in the mud upon sulphates held in solution in the mineral water. The bronze would yield the copper, and perhaps also the antimony in the tetrahedrite. The association and mode of occurrence of these recently formed minerals strongly resemble those of the natural species.
F. W. R.

Daubrée, [Prof.] Formation contemporaine dans la source thermale de Bourbonne-les-Bains (Haute-Marne) de diverses espèces minérales, galène, anglésite, pyrite et silicates de la famille des zéolithes, notamment la Chabasie. [On the Recent Formation of Galena, Anglesite, Pyrites, Chabasite, etc. in the hot Springs of Bourbonne-les-Bains (Haute-Marne).] *Compt. Rend.* t. lxxx. pp. 604–607, and *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 307–309.

A continuation of the working at Bourbonne-les-Bains has revealed the existence of *galena* and *anglesite* on a fragment of old lead. *Limonite* and *iron-pyrites* have also been found. The Roman concrete contains *chabasite* and other zeolites similar to those in the well-known case of Plombières.
F. W. R.

——. Association dans l'Oural du platine natif à des roches à base de péridot; relation d'origine qui unit ce métal avec le fer chromé.] [Association, in the Urals, of Native Platinum with rocks having a peridote base; Relation as to Origin, uniting this metal with Chrome-iron.] *Compt. Rend.* t. lxxx. pp. 707–714, and *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 311–314.

It has long been supposed that the platinum washed in parts of the Ural had its origin in serpentine rocks. From the examination of pebbles, associated with the platinum, the writer concludes that the matrix of the metal near Nischne-Tagilsk consists of peridote, more or less altered to serpentine, and accompanied by diallage. He discusses the relation of the platinum to the chrome iron-ore, in which it is frequently found; and compares the platinum-bearing rocks with certain meteoric stones.
F. W. R.

——. Notice complémentaire sur la formation contemporaine de minéraux par les sources thermales de Bourbonne-les-Bains (Haute-Marne): production de la phosgénite. [Additional Note on the Formation of Minerals by the Thermal Springs of Bourbonne-les-Bains: Production of Phosgenite.] *Compt. Rend.* t. lxxxi. pp. 182–185; see also *l'Institut*, Aug. 4.

Lead-pipes have been found coated with the rare mineral phosgenite (chloride of lead), covered with a crust of mixed galenite and gypsum.

——. Exemples de formation contemporaine de la pyrite de fer dans les sources thermales et dans de l'eau de mer. [Recent Formation of Iron-pyrites in Thermal Springs and in Sea-water.] *Compt. Rend.* t. lxxxi. pp. 854–859.

Announces the discovery of iron-pyrites associated with crystals of

calcite, incrusting flint implements and Roman bricks in connexion with the conduits of the thermal springs of Bourbonne-les-Bains, likewise in the pisolitic limestone deposited by the hot springs of Hammam-Meskontine, in the Province of Constantine, Algeria. The last instance of recently formed iron-pyrites is due to the action of fresh and salt water mixed, the mineral having been detected by Mr. Weston in a fissure in a piece of wood forming part of H.M. Yacht 'Osborne.'
G. A. L.

Davidson, J. Analysis of Titaniferous Iron Sand from North Berwick. *Proc. R. Soc. Edinb.* viii. pp. 523–525.

A layer of the sand was found lying along the shore, derived from trap tuffs traversed by dykes and veins of Basalt. The sand was highly magnetic. Sp. gr. 4·6. R. E., Jun.

Deane, Rev. Dr. G. The Minerals of the Bible. In Cassell's Bible Educator. 4to.

Delesse, Prof. A. Analyse d'un travail de M. J. D. Dana sur le Pseudomorphisme en Serpentine. [Summary of Mr. J. D. Dana's work on Pseudomorphism in Serpentine.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 179–181.

Prof. Dana's paper is noticed in the GEOLOGICAL RECORD for 1874, p. 228.

Des Cloiseaux, M. Note sur la Forme cristalline et sur les Propriétés optiques de la Durangite. [Crystalline Form and Optical Properties of Durangite.] *Ann. Chim. Phys.* sér. 5, t. iv. pp. 401–406; 3 figs.

Examination of Mexican crystals of Durangite. The dominant form is that of an oblique octahedron with rhombic base. The plane of the optic axis is perpendicular to the plane of symmetry; the acute bisectrix is negative; dispersion is feeble, with $\rho > \nu$. F. W. R.

——. Mémoire sur les propriétés optiques biréfringentes caractéristiques des quatre principaux feldspaths tricliniques, et sur un procédé pour les distinguer immédiatement les uns des autres. [The characteristic birefracting optical properties of the four principal triclinic Felspars, and on a means of distinguishing them immediately from one another.] *Ann. Chim. Phys.* sér. 5, t. iv. pp. 429–444, 7 figs.; and *Compt. Rend.* t. lxxx. pp. 364–371, 3 figs.; *N. Jahrb.* Heft iii. pp. 279–284, 3 figs.; Abstract, with table by **E. S. D[ana]**, in *Amer. Journ.* ser. 3, vol. ix. p. 322.

An examination of the 4 triclinic felspars (albite, oligoclase, labradorite, and anorthite) has led the author to suggest means for their discrimination founded on the phenomena of double refraction. Details are given and illustrated by figures. His conclusions oppose Tschermak's views on the constitution of felspars. The employment of optical means has corrected several determinations of felspar by other mineralogists. The *Moonstone* of Mineral Hill, Pennsylvania, and the lamellar felspar associated with *Kjerulfine* of Bamle in Norway, named *Tschermakite* by v. Kobell, is referred to albite; *Andesine* is probably only an altered oligoclase, and the *Hafnefjordite* of Iceland is referred to labradorite. F. W. R. & G. A. L.

Des Cloiseaux, M. Note sur l'élément pyroxénique de la roche associée au platine de l'Oural. [The Pyroxenic Element of the Rock found associated with Platinum in the Urals.] *Compt. Rend.* t. lxxx. pp. 785, 786.

Crystallographic and optical study of the mineral described as diallage in M. Daubrée's paper on the occurrence of platinum [p. 236] leads to the conclusion that the pyroxenic mineral in the peridote rock of Nischne-Tagilsk is a ferriferous salite. F. W. R.

——. [A new Felspar, &c.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft ii. pp. 455–462; 5 figs.

Refers, among other things, to recent optical studies which lead the author to infer the existence of a new triclinic felspar, standing close to orthoclase chemically, but very different in optical characters. The species are evidently related by dimorphism. F. W. R.

——. [Microcline.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft iv. pp. 955–957; 2 figs.

Note announcing that the intercalated lamellæ and veins in microcline consist of albite. Microcline is a dimorphous triclinic species.

——. [Mineralogical Notes.] *N. Jahrb.* Heft iv. pp. 395–399.

Notes on recent mineralogical work, in a letter to Vom Rath, who adds remarks on the constitution of the felspars, &c.

Dewalque, Fr. Notes sur la glauconie d'Anvers. [Glauconite of Antwerp.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires*, pp. 3–5.

Gives analysis leading to the formula

$$(2\dddot{Al}^2, \dddot{Fe}^2)\ddot{Si}^3+3(\dot{Fe}, \dot{K}, \dot{Ca}, \dot{Mg}, \dot{Na}^2)\ddot{Si}+3\dot{H}^2.$$

Dieulafait, L. Diamonds and Precious Stones. New Ed. 8vo.

Doell, Ed. Dialogit nach Manganblende und Baryt: pseudomorphosen nach Fahlerz von Přibram. *Verh. k.-k. geol. Reichs.* pp. 95–97.

The following pseudomorphs are described:—1. Diallogite after manganese-sulphide; 2, after barytes. Next, three new ones from Pribram; 3. Zinc-blende after tetrahedrite; 4. Specular iron after the same; 5. A mixture of chalcopyrite, redruthite, zinc-blende, and galena after the same. Suggestions as to minerals which may stand in paragenetic relation to tetrahedrite are added. E. B. T.

——. Kupferkies und Bitterspath nach Cuprit. [Copper-pyrites and Bitter spar after Cuprite.] *Min. Mitt.* Heft i. pp. 31–34; plate; also *Verh. k.-k. geol. Reichs.* pp. 33–35.

Description of pseudomorphs from the copper-mines of Tagilsk, Ural, exhibiting a mixture of copper-pyrites and brown spar in alternating layers, which replace octahedral crystals of cuprite. Copper-pyrites is therefore not the oldest mineral in these deposits. A portion of the copper-pyrites has been replaced by iron-pyrites. F. W. R.

Doelter, Dr. C. Beiträge zur Mineralogie des Fassa- und Fleimserthales. [Mineralogy of the Fassathal and Fleimserthal.] *Min. Mitt.* Heft iii. pp. 175–182.

Describes the epidote of the Allochetthal; chabasite, epidote, and iron-glance of the Mal Inverno; fassaite from the Ricoletta; vorhauserite from the Pesmeda chain; dolomite from the Rodellaberg; fluorite from the Cima d'Asta; hornblende crystals in melaphyr near Roda; and felspar from the Val di Madonna. Gives a list of minerals occurring at Monzoni. F. W. R.

——. Bemerkungen zu dem Artikel des Herrn G. v. Rath in Verh. No. 14. *Verh. k.-k. geol. Reichs.* pp. 289, 290.

In reply to Vom Rath's criticisms in a former number.

——. Ueber einige neue Mineralfunde aus Süd-Ost-Tirol. *Verh. k.-k. geol. Reichs.* pp. 295, 296.

On Vorhauserite—probably a pseudomorph after augite. The fassaite of the N. side of Mt. Monzoni contains calcite, and is probably a secondary product. Fluor spar noted from the Cima d'Asta. E. B. T.

——. Thompsonit (Componit) von Monzoni. *Verh. k.-k. geol. Reichs.* pp. 304, 305.

Note to prove that this mineral occurs in Mt. Monzoni (Tyrol).

Domeyko, —. Sur les minéraux tellurés récemment découverts au Chili. [Telluric Minerals recently found in Chile.] *Compt. Rend.* t. lxxx. pp. 632–634.

The minerals described are hessite (with two analyses) and tellurate of lead; both come from the Condoriaco mine, province of Coquimbo, about 15 kilometres east of Arqueros silver-mines. This is the only locality in Chile for these minerals. G. A. L.

Drasche, Dr. R. von. Ueber ein neues Braunstein-Vorkommen in Untersteiermark. [New Occurrence of Manganese-oxide in Lower Styria.] *Verh. k.-k. geol. Reichs.* p. 52.

Six inches thick, in Gailthal schists, found in well-boring.

Dumas, M. E. Note sur la Nature de la Pierre de Touche. [Nature of Touchstone.] *Ann. Chim. Phys.* sér. 5, t. vi. pp. 263–275.

Contains references to the Touchstone from ancient writers, and results of chemical and microscopical examination of a fragment of touchstone of excellent quality which had been long in actual use. This is found to be a fossil wood, retaining some of its original carbon, though most of the organic structure has been replaced by silica. F. W. R.

Egleston, Prof. T. Notes on the Treatment of Mercury in North California. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 273–307.

Describes the ores of mercury of N. California. They are metallic mercury and cinnabar, and are found in serpentine, often associated with chalcedony. At the Rattlesnake Mine the rock contains much petroleum: and at the Geysers the ore is associated with large quantities of sulphur and gypsum. R. B. N.

Feistmantel, Dr. O. Mineralogische Notizen aus Indien. *Verh. k.-k. geol. Reichs.* pp. 391–393.
Note on muscovite and lepidolite mica.

Fischer, H. Nephrit und Jadeit nach ihren mineralogischen Eigenschaften, sowie nach ihrer urgeschichtlichen und ethnographischen Bedeutung. [Nephrite and Jadeite: their mineralogical properties, and their importance in prehistoric archæology and ethnography.] Pp. 416; 2 plates, 131 woodcuts. 8vo. *Stuttgart.*

Foster, Dr. C. Le Neve. Notes on Haytor Iron Mine. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 628–630.*
Describes the occurrence of magnetic iron-ore, and the associated minerals, at this mine.

——. On the place and mode of occurrence of the mineral Andrewsite. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 163, 164.
Andrewsite, a hydrous phosphate of iron and copper, occurs in *vughs* or in crevices in the lode of West Phœnix Tin Mine, near Liskeard.

——. Note on a new locality for the mineral Pistacite. *Journ. R. Inst. Cornwall*, no. xvii. p. 213.
The author has found pistacite with garnets and axinite at Perranzabuloe.

Foster, Dr. C. Le Neve, and A. K. Barnett. Guide to the Museum of the Royal Geological Society of Cornwall, Penzance. Pp. 15. 8vo. *Truro.*
A provisional guide, devoted almost entirely to a description of the mineral collection.

Fouqué, F. Nodules à Wollastonite, pyroxène fassaïte, grenat mélanite des laves de Santorin. [Nodules with Wollastonite, Fassaïte, and Melanite Garnets, from the lavas of Santorin.] *Compt. Rend.* t. lxxx. pp. 631–635.
Ten analyses given.

——. Étude des nodules à oligoclase des laves de la dernière éruption de Santorin. [Oligoclase Nodules of the Lavas of the last eruption at Santorin.] *Compt. Rend.* t. lxxxi. pp. 220–223.
By thus adding oligoclase to albite, anorthite, and labradorite, already shown to be present in these lavas, the author completes the number of the principal felspar types. An analysis of the nodules is given. G. A. L.

——. Nouvelles observations sur les fumerolles de Santorin. [Fumeroles of Santorin.] *Compt. Rend.* t. lxxxi. pp. 794, 795.

Fouqué, F. [Leucite and Anorthite.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvi. Heft ii. pp. 444, 445.

Letter calling attention to the occurrence of leucite in Colorado, and of anorthite in the older rocks of Santorin.

Foye, Prof. James C. Tables for the Determination and Classification of Minerals found in the United States. Pp. 38. 12mo. *Chicago.*

Frazer, Prof. Persifor, Jun. Mineralogical Notes. *Proc. Ac. Nat. Sci. Philadel.* pt. 1, p. 10.

A specimen of chlorite-slate contained crystals of oligoclase, which in turn contained crystals of chlorite.

——. Tables for the Determination of Minerals. Translated from the German of Weisbach. Pp. 117. 8vo. *Philadelphia.*

Frenzel, A. Mineralogisches. *N. Jahrb.* Heft vii. pp. 673–686.

Notes on the vanadinite and descloizite of Wanlock Head; on linarite from the Argentine Republic; on goslarite from Freiberg; löllingite from Dauphiné; the spiauterite or hexagonal cadmiferous blende of Přibram; famatinite from Peru; artificial copper-glance and pucherite; Saxon zöblitzite; on remarkable crystals of quartz and calcite from Saxony; and on twin-crystals of magnetite from the neighbourhood of Sebnitz. F. W. R.

——. Chloritil. *Min. Mitt.* Heft i. pp. 42, 43.

Chloritile is a new mineral from Schneeberg, in Saxony, where it occurs in capillary, fibrous, and compact forms, of a pale green colour, associated with aragonite and wapplerite. Its chemical composition may be represented by the formula:—

$$8CuO \,.\, As_2O_5 + 6H_2O.$$

F. W. R.

Frenzel, A., and G. vom Rath. Ueber merkwürdige Verwachsung von Quartzkrystallen auf Kalkspath von Schneeberg in Sachsen. [Remarkable Growth of Crystals of Quartz on Calcite at Schneeberg, Saxony.] *Pogg. Ann.* Bd. clv. pp. 17–24, with part of plate.

Description of crystals which exhibit a regular growth of quartz over crystals of calcite.

Friedel, C. Sur certaines altérations des agates et des silex. [Altered Forms of Agate and Flint.] *Compt. Rend.* t. lxxxi. pp. 979–981.

Account of examination of specimens of altered agates from Uruguay. The altered mineral was found to be nearly anhydrous, the silica containing only a third of the water of the normal agate. G. A. L.

Fuchs, Dr. C. W. C. Practical Guide to the Determination of Minerals by the Blowpipe. Translated and edited by **T. W. Danby.** Pp. 88. 8vo. *London.*

After an enumeration and description of the needful apparatus and reagents, an account is given of the blowpipe-reactions characteristic

4

of the elementary substances. This is followed by a classified list of general preliminary reactions; after which comes a systematic description of the blowpipe-reactions which characterize the principal mineral species. A list of minerals, with their hardness, specific gravity, and crystallographic systems, is appended. F. R.

Fuchs, Dr. C. W. C. Anleitung zum Bestimmen der Mineralien. [Guide to the Determination of Minerals.] 2 Aufl. *Marburg.*

Gage, James R. On the occurrence of the Lead Ores in Missouri. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 116–125, with 8 figs.

Only the S.E. part of Missouri is described. The ore occurs in magnesian limestone, of which analyses are given. It is found disseminated through the rock, or deposited in flat sheets or in fissures, some vertical and others horizontal; the galena likewise occurs embedded in the superficial soil, forming "float mineral." In Moniteau Co. the galena forms veins in coal. F. W. R.

Garnier, J. Les Minéraux dans la Nouvelle Calédonie. [Minerals in New Caledonia.] *Moniteur de la Nouvelle Calédonie,* January 6.

Gautier, M. Note on the Dephosphoration of Iron Ores by Jacobi's Process at the Kladno Ironworks, Bohemia. *Mem. Soc. Civ. Eng.* May 7, pp. 142–151. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 366–369.

Analyses given.

Genth, Dr. F. A. On the Mineralogy of Pennsylvania, being Report B of the Second Geological Survey of Pennsylvania, 1874. With an Appendix on the Hydro-carbon Compounds, by **S. P. Sadtter.** Pp. 206. *Harrisburg.*

Gibb, Thomas. The Extraction of Silver from Cupreous Iron-pyrites. *Chem. News,* vol. xxxi. pp. 165, 166.

Gives percentage of copper and silver in pyrites from Rio Tinto, Tharsis, and San Domingos.

Goodchild, J. G. Wulfenite at Caldbeck Fells. *Geol. Mag.* dec. ii. vol. ii. pp. 565, 566.

Calls attention to the occurrence of wulfenite in the Caldbeck Fell Mines in Cumberland, where it is associated with anglesite, pyromorphite, and other ores of lead. Hausmannite has also just been detected in the Hæmatite-mines of the Cleator district, West Cumberland. J. G. G.

Gould, C. Note upon a Recent Discovery of Tin-ore in Tasmania. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 109, 110.

The ore is not "stream-tin" in the true sense of the word; but the disintegration of veins and strings running through the porphyritic rock, of which the mount is composed, gives rise to a shallow surface-drift from which the tin-ore is procured. Lodes in adjacent slaty rocks contain antimony and zinc-blende. R. E., Jun.

Greenwood, W. H. A Manual of Metallurgy. Vol. ii. 8vo. *London* and *Glasgow*.

Contains notices and analyses of ores. [Not original.]

Groth, P. Ueber das Studium der Mineralogie auf den deutschen Hochschulen. [The Study of Mineralogy in the German High Schools.] Pp. 22. 8vo. *Strassburg*.

Gurlt, Dr. Ueber ein neues Steinsalz-Vorkommen bei Hänigsen, unweit Celle in der Provinz Hannover. [New Occurrence of Rock-salt near Hänigsen in Hanover.] *Verh. nat. Ver. preuss. Rheinl.* 32 Jahrg. p. 76.

Gurney, Rev. H. P. Crystals. *Proc. W. Lond. Sci. Assoc.* vol. i. pt. 1, pp. 34–37 (abstract).

A few of the leading principles of crystallography noticed.

Hahn, Dr. P. D. Phosphorescence of Minerals. *Cape Monthly Mag.* vol. x. no. 59, pp. 285–293.

Gives a sketch of the history of phosphorescence; describes the phenomena as produced by heat, light, electricity, and friction; refers to the physical explanation of the phenomena; and gives a popular account of the author's researches on phosphorescence by heat. [See also GEOLOGICAL RECORD for 1874, p. 235.] F. W. R.

Hawes, George W. On Diabantite, a chlorite occurring in the trap of the Connecticut Valley. *Amer. Journ.* ser. 3, vol. ix. pp. 454–457.

A chlorite occurring in the amygdaloidal cavities of a diabase from the Farmington Hills was found on analysis to resemble the mineral described by K. K. T. Liebe, under the name of *Diabantachronnyn*, which the writer has modified to the form *Diabantite*. F. W. R.

——. Contributions from the Sheffield Laboratory of Yale College.—No. xxxiv. On Zonochlorite and Chlorastrolite. *Amer. Journ.* ser. 3, vol. x. pp. 24–26.

Analyses of both minerals are given. That of zonochlorite shows it to be a very impure variety of prehnite; and that of chlorastrolite, notwithstanding a higher sp. gr., would seem to lead to a similar conclusion. Both minerals come from amygdaloidal trap in the Lake Superior region. G. A. L.

Hayes, Dr. A. A. On the Presence of Vanadium in Rocks. *Amer. Journ.* ser. 3, vol. x. p. 61.

Note of paper read before the Academy of Sciences, Boston.

Helland, A. Bergbeg, Anthracit og nogle andre Kolholdige Mineralier fra Ertsleiesteder og Granitgange. [Asphalt, Anthracite, and other Carbonaceous Minerals from Ore Deposits and Granite Veins.] *Geol. Fören. Stockholm Förhandl.* Band ii.

Particulars of occurrence and relative age, with analyses from localities in Norway and Sweden. A series of minerals approaching the brown coals in composition are referred (with reservations) to huminite (Ekman). H. M.

Herold, Hugo. Ueber die Kaoline der Formation des mittler Buntsandsteins in Thüringen. [The Kaolins of the Middle Bunt Sandstone of Thuringia.] Pp. 44. 8vo. *Jena.*

Kaolin occurs largely as a cementing medium in these sandstone It is seen under the microscope to be a mechanical mixture containin small flakes, resembling mica, and minute fragments apparently o quartz. There are also the forms which have been described as microver miculite and microschorlite. Analyses of the purified kaolin lead th author to suggest several closely related formulæ:—

1. $Al_2O_3 . 2SiO_2 + 2HO$. 2. $Al_2O_3 . 2SiO_2 + HO$.
3. $2Al_2O_3 . 4SiO_2 + 3HO$. 4. $Al_2O_3 . 3SiO_2 + 2HO$.

These formulæ show that the kaolin of the sandstone has a simila composition to that of the kaolin derived from granite; but the former is believed to owe its origin to the decomposition of mica and not o felspar.

F. W. R.

Herouard, —. Analyse de Minerais de Cuivre recueillis à Belle-Isle-en-Mer. [Analysis of Copper-ores from Belle-Isle-en-Mer (Brittany).] *Bull. Soc. Linn. Norm.* ser. 2, t. viii. pp. 158–160.

Hessenberg, Fr. von. Mineralogische Notizen. [Mineralogical Notices.] Neue Folge, Heft ix. Pp. 26, 3 plates. 4to. *Frankfurt-a.-M.*

Higgs, Samuel, Jun. Notice of an accumulation of carburetted hydrogen or "Firedamp" in the Ding-Dong Mine, situated in the parish of Madron, near Penzance. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. 1, pp. 34–37.

In reopening part of the mine which had been under water, fire-damp was met with in one of the old levels, and caused several explosions. It is supposed that it was generated by decaying timber.

C. L. N. F.

Hintze, Dr. [Vesuvian Mica.] *Pogg. Ann.* Bd. clv. pp. 66, 67.

Results of investigation of the optical and thermal characters of the red mica of Vesuvius, published as an appendix to Prof. vom Rath's 'Min. Mitt.' [p. 254]. The author's investigation shows that the mica is monoclinic.

F. W. R.

Hirschwald, Dr. J. Zur Kritik des Leucitsystems. [Crystallization of Leucite.] *Min. Mitt.* Heft iv. pp. 227–250, with plate.

A critical examination of the crystalline forms of Leucite. Argues against Prof. vom Rath's views on the quadratic crystallization of this species, and maintains that leucite is regular, but supports Scacchi's view of its polysymmetry.

F. W. R.

Hornstein, Ferd. Fried. Kleines Lehrbuch der Mineralogie; unter Zugrundlegung der neuen Ansichten in der Chemie für den Gebrauch an höheren Schulen bearbeitet. Zweite vermehrte und verbesserte Auflage. [Elementary Treatise on Mineralogy, according to Modern Chemistry; for use in Higher Schools.] Pp. 320; 5 plates, 48 figs. in text. *Cassel.*

Hughes, John. Note on the Analysis of Cambridge Coprolite. *Chem. News*, vol. xxxi. p. 209.

Contains analyses of coprolite from Cambridge and Charleston.

Hull, Prof. E. Crystals of Olivine from Vesuvian Lava and Irish Basalt. *Quart. Micr. Journ.* vol. xv. p. 411.

When polarized, thin slices of the former mineral gave a rich play of colours, while those of the latter only gave feeble tints. Prof. Hull thinks that in nearly all cases the interior of the olivine crystals in the Irish rocks has become replaced by some chloritic or other mineral.
E. T. N.

Janettaz, Edouard. Note sur des Minerais de Cuivre de la Nouvelle-Calédonie. [Copper-ores from New Caledonia.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 54, 55.

Notices especially an ore consisting of black, friable, earthy matter, essentially composed of sulphur and copper. It is a mixture of earthy chalcosine, limonite, and a little iridescent copper-sulphide. Cuprite in crystals or in small nodules occurs associated with this ore. G. A. L.

Janovsky, J. V. Zur Kenntniss des Cronstedits von Přibram. [Cronstedite from Přibram.] *Journ. prakt. Chem.* N. F., Bd. xi. pp. 378–384.

Two analyses of well-crystallized Cronstedite from Přibram, in Bohemia, led to the following formula:—$R_2O_3 . SiO_2 + 3RO . SiO_2 + 4Aq$; where $R_2O_3 = Fe_2O_3$: and $RO = FeO$, MnO, and MgO. The composition is therefore different from that which had been deduced from previous analyses of the mineral from this locality. F. W. R.

John, K. Thomsonit und Amphibol vom Monzoni. [Thomsonite and Hornblende from Monzoni.] *Verh. k-k. geol. Reichs.* pp. 305–306.

Analysis adduced, proving the Monzoni mineral to be Thomsonite: another analysis of a dichroic mineral proves the latter to be actinolite.

Jones, Prof. T. R. Lecture on flint, agate, jasper, and other kinds of silica. *5th Ann. Rep. Wellington Coll. Nat. Sci. Soc.* pp. 47, 48.

Kaemmerer, Hermann. Ueber den Chromgehalt des Smirgel und des Bolus. [Chromium in Emery and Bole.] *Journ. prakt. Chem.* N. F., Bd. xi. p. 79.

Note on the occurrence of a small proportion of chromium in emery, and of traces of the same element in bole.

Kalkowsky, Ernst. Ueber den Salit als Gesteinsgemengtheil. [Salite, as a Rock-constituent.] *Min. Mitt.* Heft ii. pp. 45–50; woodcut.

Describes the occurrence of Salite (variety of augite) as an essential constituent of various crystalline schistose rocks. Thus it occurs in a chloritic gneiss, between Liebau and Schmiedeberg, in Silesia. The mineral appears in the form of prisms, granules, and microlites. Several rocks containing salite are mentioned, and their localities given.
F. W. R.

Kengott, Dr. A. Ueber die Krystallgestalten des Quarzes und die trapezoëdrische Tetartoëdrie des hexagonalen Systems. [Crystallization of Quartz, and Trapezohedral Tetartohedrism in the Hexagonal System.] *N. Jahrb.* Heft i. pp. 27–35; 3 woodcuts.

Maintains that the prism which is regarded as the normal prism ∞P in quartz is really the diagonal form $\infty P2$, and that the pyramid P should also be regarded as the diagonal pyramid P2. The trigonal pyramids, trigonal prisms, ditrigonal prisms, and trigonal trapezohedra all require change of sign; and the writer holds that the change is absolutely needed, since the ordinary conception leads to forms which do not satisfy the geometrical characters of the hexagonal system, since they require an unequal division of the secondary axes. F. W. R.

——. [Native Silver from Dauphiné.] *N. Jahrb.* Heft i. pp. 5, 455.

Note on Prof. Church's analyses [see Geological Record for 1874, p. 226]. Suggests that 26·15 p. c. of mercury is a misprint for 16·15 p. c., and calculates that one specimen contains 68·47 p. c. of Ag_6Hg, whilst the other contains 77·76 of this compound, associated in both cases with Ag_2Sb. F. W. R.

——. [Triplite from the Argentine Republic.] *N. Jahrb.* Heft ii. pp. 171, 172.

Discusses Siewert's analyses of Stelzner's Triplite from the Sierra of Cordoba, and deduces for the paler variety the formula $RF^2 + 2(3RO . P^2O^5)$, and for the darker variety $RF^2 + 3RO . P^2O^5$. F. W. R.

——. [Twin-crystals of Celestine.] *N. Jahrb.* Heft iii. pp. 293, 294.

Announces the discovery of twin-crystals of celestine among Sicilian specimens in the Polytechnic at Zürich. Crystals are twinned parallel to the pinacoid $\infty \breve{P} \infty$. F. W. R.

Kern, Sergius. Analysis of Graphite from Siberia. *Chem. News*, vol. xxxii. p. 229.

Analyses of 2 samples of graphite from the Stepanovsky mine.

Kitton, J. On Silicious Substances found in Portland Stone. (Norwich Geol. Soc.) *Norwich Mercury*, March 13, p. 3; and *Science Gossip*, vol. xi. pp. 112, 113.

Microscopic examination showed no trace of organic remains, so common in flints.

Klein, Dr. Carl. Mineralogische Mittheilungen No. V. *N. Jahrb.* Heft iv. pp. 337-370.

Describes types of crystals of *Anatase* from the Binnenthal in Switzerland:—1. Type of acute pyramid, from predominance of P; 2. Of obtuse pyramid from $\frac{1}{7}P$; 3. Prismatic type from $\infty P \infty$; 4. Pyramidal type, from $\frac{2}{3}P$. Most of the crystals of anatase from this locality have been mistaken for wiserin (xenotime). Describes a small honey-yellow crystal from the Binnenthal, exhibiting combination of $P . \infty P . 3P3$, which he regards as true xenotime. F. W. R.

Klein, Dr. Carl. [Swiss Minerals.] *N. Jahrb.* Heft viii. pp. 851–853.

The most noteworthy are the xenotime and anatase of the Binnenthal. Crystals of anatase of the first, second and third types were observed, and some remarkable crystals resembling those of the fourth type, but having the pyramid $\frac{3}{5}P$, instead of $\frac{2}{3}P$, combined with $\infty P \infty$. F. W. R.

——. Einleitung in die Krystallberechnung. [Introduction to Crystallographic Calculation.] 1. Abtheil. Pp. 208, 126 woodcuts, and 6 plates. 8vo. *Stuttgart.*

Klette, Herr. Ueber Anatas und Brookit von Wolfshau bei Schmiedeberg in Schlesien. [Silesian Anatase and Brookite.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft ii. pp. 442, 443.

Note on the discovery of anatase, in iron-black acute octahedra, with brown tabular crystals of brookite, in cavities of a granite at Wolfshau, near Schmiedeberg, in Silesia. F. W. R.

Knop, A. Ueber Koppit vom Kaiserstuhl. [Koppite.] *N. Jahrb.* Heft i. pp. 66–69.

Finds that the so-called pyrochlore of the Kaiserstuhl differs chemically from the true pyrochlore, though resembling it physically. Proposes, therefore, to distinguish the Kaiserstuhl mineral as a distinct species under the name of *Koppite*, after Kopp, of Heidelberg. Koppite contains, $R_5Nb_4O_{15} = 5RO \cdot 2Nb_2O_5$, where $R = Ce(La, Di), Ca, Na_2, K_2$, Fe and Mn, while O is partly replaced by F. F. W. R.

——. Ueber Enargit von Mancayan auf Luzon (Manila). [Enargite from Luzon.] *N. Jahrb.* Heft i. pp. 69, 70.

Three analyses of enargite from Luzon, where it is used as a copper-ore. Hitherto the mineral has been found only in America. The Luzon mineral agrees in chemical composition with the American specimens previously analyzed. F. W. R.

——. Ueber Pyrosklerit aus dem Kalksteinbruch von St. Philipp bei S. Marie aux Mines. [Pyrosclerite from Alsace.] *N. Jahrb.* Heft i. p. 70.

Analysis of a mineral from S. Marie aux Mines in Alsace, which agrees in composition with the pyrosclerite of Elba.

——. Ueber eine mikrochemische Reaction auf die Glieder der Hauynfamilie. [Micro-chemical Reaction of Hauyne Minerals.] *N. Jahrb.* Heft i. pp. 74–76.

Describes a new reaction by which hauyne, sodalite, and nosean may be distinguished from other minerals. The section of rock containing any mineral of the hauyne group is removed from the slide by warm alcohol, and transferred to a platinum crucible containing a little sulphur. When heated the sulphur sublimes, and the hauyne then appears of a beautiful blue colour. The smallest particle can be thus detected. F. W. R.

Kokscharow, N. von. Materialien zur Mineralogie Russlands. [Mineralogy of Russia.] Band vi. Schlussheft, Band vii. pp. 1–176. Also Atlas to the same. *St. Petersburg,* 1875.

Kokscharow, N. von. [Biotite.] *N. Jahrb.* Heft viii. pp. 857, 858.

Maintains, on crystallographic grounds, that the Vesuvian magnesia-mica (biotite) is truly hexagonal, notwithstanding optical reasons for a different conclusion. F. W. R.

Krenner, Dr. Josef Alex. Wolframit aus dem Trachyte von Felsö-Bánya. [Wolframite from the Felsöbánya Trachyte.] *Min. Mitt.* pp. 9-12, with plate.

A crystallographic description of wolframite from a much decomposed trachyte. Its occurrence in so new a rock is notable, as it has been supposed that this species was confined to the oldest rocks, where it occurs in association with tin-ore; no tin has yet been found in Hungary. 12 forms are described as occurring in the Felsöbánya wolframite, of which 6 are new. The fundamental prism (1 1 0) has not been observed, but is replaced by the prism (3 1 0). F. W. R.

Laguerenne, Teodoro. Apuntes sobre el Mineral de San Nicolas del Oro. [Notes on the Ore of S. Nicolas del Oro.] *Naturaleza*, t. iii. no. 9, pp. 167-171.

Lasaulx, Dr. A. von. Mineralogisch-krystallographische Notizen. [Mineralogical and Crystallographic Notices.] *N. Jahrb.* Heft ii. pp. 128-151, with plate of crystals. [Notice 4 translated in *Boll. R. Com. Geol. Ital.* pp. 106-111.]

Describes:—1. A new fossil resin from the lignite of the Rhine valley, to be called from its locality *Siegburgite*; 2. The occurrence at Striegau of fluorspar, in the triakis-octahedron 4O, which had not been previously observed as an independent form; 3. Crystals of the double chloride of sodium and iridium, and of the chloride of sodium and rhodium; 4. New occurrence of alunite near Breuil in the Auvergne; 5. Albite from Guatemala; and 6. Garnet from Geyer in Saxony, which exhibits combination of tetrakis-hexadedra $\infty O\frac{3}{2}$ and $\infty O2$. F. W. R.

——. [Mineralogical Notes.] *N. Jahrb.* Heft vi. pp. 629-633.

Notes referring to crystals of scorodite from Dernbach, near Montabaur; to amazon-stone from the granite of Königshayn, near Görlitz; to minerals resembling monazite and gadolonite from the Riesengebirge; to the occurrence of magnesite at Baumgarten, near Frankenstein; to the basalt of Landeck in Glatz; and to crystals of quartz from Lizzo in Italy. F. W. R.

Laspeyres, H. Krystallographische Bemerkungen zum Gyps. [Crystallographic Remarks on Gypsum.] *Min. Mitt.* Heft iii. pp. 113-130, with plate and 2 woodcuts.

Description of twin-crystals of gypsum from Eichstadt, near Merseburg; of crystals of this species from the Papelsberg in the Siebengebirge; and of twin-crystals of the same species from Eisleben. The last-named crystals exhibit the following new forms: $-\frac{6}{7}P\frac{2}{3}$ and $-\frac{3}{2}P\infty$. The flexibility and cleavage are also noticed. F. W. R.

Laspeyres, H. Ueber die Krystallform des Antimons. [Crystallization of Antimony.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft iii. pp. 574–622, with plate and 5 woodcuts.

Contains chapters on the occurrence of crystals of antimony; the history of our knowledge of its crystallography; a detailed account of the crystals accidentally produced from hard lead at Stolberg; discussion of the crystallographic constants of antimony; on its cleavage; and enunciation of a new law of twinning. F. W. R.

Lecoq de Boisbaudran, —. Caractères chimiques et spectroscopiques d'un nouveau métal, le Gallium, découvert dans un blende de la mine de Pierrefitte, vallée d'Argelès. [Chemical and spectroscopic characters of a new metal, Gallium, found in a blende from the Pierrefitte mine in the Argelès valley.] *Compt. Rend.* t. lxxxi. pp.493–495.

Spectroscopic examination of zinc-blende from the Pierrefitte mine, valley of Argelès, Pyrenees, showed that this mineral contained a new element, and thus led to the discovery of the metal *Gallium.* F. W. R.

Lecovec, —. Echantillons de Quartz hyalin de Huelgoët (Finistère). [Specimens of Vitreous Quartz from Huelgoët.] *Bull. Soc. Linn. Norm.* ser. 2, t. viii. p. 341.

Leeds, Prof. Albert R. Mineralogical Note. A magnesia-iron Tremolite, not asbestiform, from the soapstone quarry above Manayunk, Pa. *Amer. Journ.* ser. 3, vol. ix. pp. 229, 230.

"The mineral is the *Anthophyllite*, so-called, given in the list of American localities on page 780 of Dana's Mineralogy, 5th edition." 2 analyses, with mean, are given. G. A. L.

Lill, M. von. Analysen ausgeführt im Laboratorium des k.-k. General-Probiramtes in Wien in den Jahren 1874 und 1875. Zusammengestellt von M. v. Lill. *Berg. Hütt. Jahrb.* Bd. xxiii. pp. 352–367.

Part I. Contains analyses of Alpine iron-ores and ores of lead, copper, and manganese; II. On artificial products; III. Gives analyses of rock-salt; IV. Limestone; V. Graphite; VI. Peat, coal, and coke. Most of the samples were from Styria, Hungary, Transylvania, or Bohemia. F. W. R.

Limur, Comte de. Le Jade Océanien en gisement dans la Baie de Roguédas près Vannes (Morbihan). [Oceanic Jade in place in the Morbihan.] Extrait du Rapport fait au Congrès pour l'Avancement des Sciences Françaises, Sess. 1875.

——. Quelques Recherches au Chalumeau pour essayer de reconnaître les substances plus ou moins tenaces .... &c. .... et étude et description du filon de la baie de Roguédas (Morbihan). [Blowpipe Investigations to discover a Test for Tenacious Substances. Account of Lode, Roguedas Bay.]

Lindström, G. Undersökning af magnetkisens sammansältning. [On the Composition of Magnetic Pyrites.] *Œfvers. K. Svenska Vet.-Akad. Förhandl.* 1875, No. 2.

Chemical analyses of magnetic pyrites from six localities (Utö, Freiberg, Kongsberg, Tilasinwuori in Tammela, Smörvik near Kragerö, Adolf-mine in Jemtland) are given. The mean of the six analyses gives 1Fe : 1·1192 S. The formula lies between $Fe^8 S^9$ and $Fe^7 S^8$, but is a little nearer the former. 36 analyses of magnetic pyrites, collected from different journals, are enumerated. E. E.

Lindström, G. Analys af *gadolinit* från Stora Tuna. [Analysis of Gadolinite from Great Tuna.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. pp. 218–220.

Liversidge, Prof. A. Nickel Minerals from New Caledonia. *Trans. Roy. Soc. N. S. Wales* for 1874, pp. 75–80.

Two hydrated silicates of nickel and magnesia found in small veins and fissures traversing serpentine, near Mont d'Or, Noumea, N. Caledonia; one of them, first named *Nouméite*, was subsequently altered to *Garnierite* (see Geological Record for 1874, p. 240). The former name *Nouméite* is transferred to another amorphous mineral. H = 2·0 to 2·5; Sp. gr. = 2·58. Chemical comp. not uniform; but the mineral is also a hydrated silicate of nickel and magnesia, distinguished from Garnierite by its much darker apple-green colour and other physical properties. R. E., Jun.

Ludwig, E. Ueber den Pyrosmalith. [Pyrosmalite.] *Min. Mitt.* Heft iv. pp. 211–216, with fig.

Well-formed hexagonal prisms of pyrosmalite from Nordmark, without any trace of weathering, were analyzed by the writer, who shows that the iron exists only in the form of protoxide, or as a dyad. Empirical and graphic formulæ are given. F. W. R.

Lundstrom, C. H. *Karyinit*, nya mineral från Långbanshyttan i Vermland. [Karyinite, a new mineral from Långbanshyttan in Wermland.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. pp. 223, 224.

Note changing the name of the mineral from Koryinite to Karyinite, from *καρύϊνος*=nut-brown.

Machattie, Dr. A. T. Native sodium nitrate, or "Caliche." *Chem. News*, vol. xxxi. p. 263.

Analysis of two samples of native nitrate of soda from Peru.

Mallet, Prof. J. W. On Achrematite, a new Molybdo-arsenate of Lead, from Mexico. *Journ. Chem. Soc.* pp. 1141–1147.

A mineral described as a silver-ore from Mexico was found to be a molybdo-arsenate of lead, with admixture of finely divided ferric hydrate. The molybdate appears to exist as the bibasic salt Pb_2MoO_5. It is associated with arsenate, or probably chloro-arsenate, of lead, as in mimetite. The two compounds are supposed to exist in a state of chemical combination; and, assuming that the arsenate exists as mimetite, the proportions approach to the definite atomic ratio of 3 molecules of mimetite to 4 of the bibasic molybdate. This is on the assumption that Mo = 96, and is a hexad. If Mo = 80, and is a pentad, the molybdate may exist as a chloro-molybdate, analogous in composition to vanadinite; and the chloro-molybdate might then be isomorphous with the mimetite. The name of the new mineral is derived from *ἀχρήματος*. F. W. R.

Mallet, Prof. J. W. On Limonite with the Color and Translucency of Göthite. *Amer. Journ.* ser. 3, vol. ix. pp. 460, 461.

Veins of a mineral having the blood-red colour of göthite, but the chemical composition of limonite, were found running through ordinary compact limonite from near Big Lick, Roanoke Co., Va. F. W. R.

Marchese, Eug. Scoperta di minerali d'argento in Sardegno. [Silver-ore in Sardinia.] *Boll. R. Com. geol. Ital.* pp. 100–105; also, *Atti R. Acc. Lincei*, ser. 2, t. ii.

Note on a newly discovered vein, with native silver, argentite, &c., intersecting the lead-veins worked in the Silurian schists.

Maskelyne, Prof. N. S. On Andrewsite and Chalkosiderite. *Journ. Chem. Soc.* pp. 586–591; 2 figs.

Andrewsite is a Cornish mineral, described by the author in 1872. It occurs in globular and occasionally discoid forms, with a radiated structure. Its analysis by Dr. Flight leads to the formula:—

$$2(2Fe_2P_2O_8+Fe_2H_2O_4)+CuH_2O_2.$$

The spherules of Andrewsite often contain a yellowish-brown nucleus, for which the following formula has been deduced:—

$$Fe_2P_2O_8+2Fe_2H_2O_3+Fe_4H_6O_9.$$

Andrewsite is frequently associated with bright green crystals of a mineral identified with *Chalkosiderite*. The crystals are anorthic, and present the following elements:—

$\xi=93°\,30'$; $\eta=92°\,59'$; $\zeta=107°\,41'$; $a:b:c=1:0{\cdot}79097:0{\cdot}60478$.

Crystals of Chalkosiderite form groups resembling the sheaf-like clusters of stilbite. Original measurements of the crystals are given, with a figure of their usual form and its projection. According to analysis of the Cornish specimens the composition of chalkosiderite may be thus expressed:—

$$2Fe_2P_2O_8+Fe_2H_6O_6+CuH_2O_2+4H_2O.$$ F. W. R.

——. Lectures on the Morphology of Crystals,—at the Chemical Society. *Chem. News*, pp. 3, 4; 13–15; 24–26; 63, 64; 101–103; 111, 112; 121; 153–155; 200–202; 232; with woodcuts. Also *Nature*, vol. xi. pp. 187–190.

——. [Calcite.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft ii. p. 464.

Note on a scalenohedron of Iceland spar, weighing 500 lbs.

Moissenet, Prof. —, and Assistants. [Analysis of Talc from Bourg-d'Oisans, Isère.] *Rev. Géol.* t. xii. p. 64.

Mueller, Prof. Albr. Pseudomorphosen von Eisenzinkspath nach Kieselzink. [Pseudomorph of Zinc-carbonate after Silicate.] *Verh. nat. Ges. Basel*, Th. vi. pp. 274–276.

From Altenberg, near Aix-la-Chapelle. In some cavities the crystals of silicate remain, 6–8 mm. long; in others they have been covered by the carbonate, which has gradually replaced their substance, though the tabular form of the crystal remains. E. B. T.

Navia, Severo. Observaciones sobre los Caracteres que presentan tratados al soplete los Minerales de Plata y sobre las Pegaduras que producen algunas ligas binarias de este Metal, sometiendolas al mismo tratamiento. [Blowpipe Characters of Silver Ores and Alloys of Silver.] *Naturaleza,* t. iii. no. 10, pp. 194–202; coloured plate.

Describes the characters presented by the various silver-ores when heated on charcoal before the blowpipe, and illustrates the incrustations on charcoal produced by various binary alloys of silver. F. W. R.

Neminar, E. F. Ueber die chemische Zusammensetzung des Mejonits. [Chemical Composition of Meionite.] *Min. Mitt.* Heft ii. pp. 51–56.

Transparent crystals of Vesuvian Meionite, crystallized in the common combination $\infty P \infty . P . \infty P$, were separated from adhering minerals; and two analyses were made, leading to the following empirical formula:—

$$26SiO_2 . 11Al_2O_3 . 14CaO . Na_2O . 2H_2O.$$

This formula cannot be simplified, as the lime is not isomorphously replaced by soda and potash. The author regards the water as essential to the constitution of the mineral; hence Meionite should be removed from the group of anhydrous silicates. F. W. R.

——. Minerale aus dem nordwestlichen Theile Schlesiens. [Silesian Minerals.] *Min. Mitt.* Heft ii. pp. 110, 111.

Notices the occurrence of Titanite near Friedberg, in a rock consisting of orthoclase, quartz, and decomposed diallage; also found tremolite near Friedberg, both occurrences being new. Albite is found at Schwarwasser. F. W. R.

——. Minerale aus dem süd-östlichen Theile Schlesiens. [Minerals from S.E. Silesia.] *Min. Mitt.* Heft iii. pp. 207, 208.

The minerals are spherosiderite, pyrites, bog-iron-ore, and earthy vivianite.

——. Ein neuer Fundort von Beryll. [New Locality for Beryl.] *Min. Mitt.* Heft iii. p. 208.

Beryls were found in the granite of Neumarkt near Freidstadt, in Upper Austria. The crystals are prismatic, 4 to 5 centims. long, and 3 to 8 millims. in diameter. They are often fractured, and the fissures filled with quartz or mica, proving that the rocks have suffered disturbance since the crystallization of the beryl. F. W. R.

Niederstadt, Dr. B. C. Estremadura Phosphorite. *Chem. News,* vol. xxxi. p. 144.

Complete analyses of 4 samples of impure phosphorite from the neighbourhood of Logrosan in Estremadura. The percentage of phosphoric acid varies from 26·6 to 29·6. F. W. R.

Nordenskiöld, A. E. Om förekomsten af Leucopyrit vid Brevig. [Occurrence of Leucopyrite at Brevig, Norway.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. pp. 241, 242.

Pearce, Richard. Note on Chrome Iron in the Serpentine of the Lizard. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 99, 100.

Some black granular particles in serpentine from a quarry near Cadgwith consist of chromic iron. The stone contains 1·8 p. c. of the mineral. C. L. N. F.

——. Memorandum on Pitchblende in Colorado. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, p. 102.

The pitchblende occurs with auriferous copper and iron-pyrites at the junction of gneiss and mica-schist in Russel district, Gilpin County, Colorado. C. L. N. F.

——. Note on Pitchblende in Cornwall. *Trans. R. Geol. Soc. Cornwall,* vol. ix. part 1, pp. 103, 104.

Pitchblende has been found at St. Austell Consols, Dolcoath and South Tresavean mines, where little veins cross the lode. It occurs also at Wheal Owles, but not under similar conditions. C. L. N. F.

Pichler, Adolf. [Zirlite, &c.] *N. Jahrb.* Heft i. p. 51.

Records the occurrence of *Zirlite* in the upper *Cardita*-beds near Nassereit. It is an amorphous aluminium-hydrate, occurring as an incrustation on a sandy marl. F. W. R.

Plattner. Manual of Qualitative and Quantitative Analysis with the Blowpipe, from the last German Edition. Revised and enlarged by **Prof. Th. Richter.** Edited by **T. H. Cookesley.** Pp. xviii, 515; 78 woodcuts. 8vo. *London.*

Pošepny, F. Ueber das Vorkommen von gediegenem Gold in den Mineralschalen von Verespatak. [Occurrence of Native Gold in the mineral layers of Verespatak.] *Verh. k.-k. geol. Reichs.* pp. 97-101.

The veinstones of which the layers are composed are arranged in three groups of silica, carbonates, sulphides; native gold of the composition about 70 p. c., with 30 p. c. of silver, occurs in each, but chiefly in the quartz. Concentric layers have been formed round gold in some cases, the gold nucleus being of granular structure; it is contended that the gold here was as old as the other minerals, and therefore not formed by their decomposition. E. B. T.

Pumpelly, Prof. Raphael. On Pseudomorphs of Chlorite after Garnet at the Spurr Mountain Iron Mine, Lake Superior. *Amer. Journ.* ser. 3, vol. ix. pp. 17-21, pl. ii.

These occur abundantly in a bed of chloritic schist overlying the great magnetite bed of the Spurr-Michigamme iron-range. This schist is of Archæan age (Upper Huronian iron-series). According to the writer, the history of the chlorite, both pseudomorphs and matrix, was as follows:—1. Original rock (*Marl*?). 2. Metamorphic change with crystallization of (*a*) Octahedrons of *magnetite* and certain *discoidal crystals*; (*b*) Garnets. 3. Pseudomorphic change. *Chlorite* after the original rock and after garnet, but preserving the magnetite and discoidal crystals intact. The plate gives 2 coloured figures of microscopic sections of the rock. G. A. L.

Rammelsberg, C. F. Handbuch der Mineralchemie. Ed. 2. Vol. I. Allgemeiner Theil, pp. iv, 136. Vol. II. Specieller Theil, pp. xv, 744. 8vo. *Leipzig.*

Rath, Prof. G. vom. Mineralogische Notizen. *Monatsb. k. preuss. Ak. Wiss.* pp. 523-540, with plate.

Description of crystals of phacolite from Richmond, Victoria; of some remarkable crystals of sanidine in druses of a doleritic lava from Bellingen in the Westerwald; of the brookite of Atliansk, Ural; of a new form of anatase from Cavradi in the Tavetsch; and on the chemical composition of the yellow augite of Vesuvius. F. W. R.

——. On Serpentine Pseudomorphs after Monticellite, a Lime-magnesia Chrysolite. Abstract in *Amer. Journ.* ser. 3, vol. ix. p. 403. Original paper in *Monatsb. k. Ak. Wiss. Berlin*, Nov. 19, 1874.

——. [Wrongly given as **Vom Bath.**] Mineralogische Mittheilungen. *Pogg. Ann.* Bd. clv. pp. 24–68; plate and 4 woodcuts.

On pseudomorphous crystals of monticellite (lime-olivine), occurring with anorthite at the Pesmeda Alp on the Monzoni; on the twin forms of the crystals of rhombic sulphur; on calcite from the Ahrenthal, near Brunneck, in Tyrol; and on a twin of quartz with inclined axes from Japan. An appendix gives observations on the optical characters of the red mica of Vesuvius, and several analyses of lime-soda felspars. F. W. R.

——. [Quartz and Calcite.] *N. Jahrb.* Heft viii. pp. 856, 857.

In reply to Prof. Weisbach [p. 263], showing wherein the views of Frenzel and Vom Rath differ from those of Breithaupt respecting the crystals which exhibit regular growth of quartz and calcite, from Schneeberg in Saxony. F. W. R.

——. [Enhydros.] *Verh. nat. Ver. preuss. Rheinl.* 32 Jahrg. pp. 202, 203.

Note on a Brazilian amygdule consisting of a thin shell of chalcedony in concentric deposits, and $\frac{3}{4}$ filled with water.

——. Bemerkungen zu Dr. Doelter's Arbeiten über das Monzonigebirge. [Remarks on Dr. Doelter's paper on Monzoni.] *Verh. k.-k. geol. Reichs.* pp. 247-252.

Rectification of misconceptions as to the list of Monzoni minerals, nomenclature of augite-syenite, and other points among Dr. Doelter's strictures. E. B. T.

Rath, Prof. G. vom. Phosphate of Lime of Bamle, Norway. *Amer. Journ.* ser. 3, vol. x. pp. 235, 236.

It occurs in nearly horizontal beds, 2 to 6 feet thick, in crystalline schists, and is associated with anorthite and enstatite.

R[eadwin], T. A. Doubtful Minerals. *Chem. News*, vol. xxxi. pp. 107–109, vol. xxxii. pp. 15–18.

One letter on doubtful minerals, and on confusion in mineralogical nomenclature. The other replying to Prof. Dana [p. 235] on mineralogical nomenclature, and giving a list of "doubtful minerals requiring extinction or further authentic description." F. W. R.

Readwin, T. A. Crystallography. *Chem. News*, vol. xxxii. pp. 225, 281.

Two notes, with crystallographic queries.

Reydellet, De. Fosforita de Belmez, Provincia de Cordoba. *Bol. Com. Map. Geol. Españ.* t. iii. pt. 3. Translated from *Bull. Soc. Géol. France.* See GEOLOGICAL RECORD for 1874, p. 246.

Reynès, Dr. [On a Mineralogical Classification.] *Bull. Soc. Sci. Indust. Marseille*, t. ii. pp. 126–128.

Proposes a classification based on chemical composition only, and enlarges upon the advantages it possesses over so-called natural and physical classifications. G. A. L.

Reynolds, Prof. J. E. On a specimen of Mineral Borate from Tarapaca, Peru. *Journ. R. Geol. Soc. Ireland*, ser. 2, vol. iv. pt. ii. pp. 89, 90.

The specimen consists of a mixture of common salt, with a hydrous calcium and sodium borate, which latter differs from any similar compound hitherto described. The analysis gives the formula:—

$$(Na_2O,\ 2B_2O3) + (CaO,\ B_2O_3)\ 9H_2O.$$

It appears therefore to be a new mineral, of a series of which Ulexite would be the fourth term. E. T. H.

Ross, William A. Pyrology, or Fire Chemistry; a science interesting to the general philosopher, and an art of infinite importance to the chemist, mineralogist, metallurgist, geologist, agriculturist, engineer (mining, civil, and military), &c. Pp. xxviii, 346; woodcuts and coloured plates. 4to. *London.*

Rossi, M. S. Sopra la stipa votiva di Bourbonne-les-Bains cementata da cristallizazioni metalliche contemporanee ed illustrata dal Ch. Prof. E. Daubrée. 4to. *Rome.* [See **Daubrée**, pp. 235, 236.]

Rudler, F. W. Notes on specimens of Phosphorite from the Department of the Lot, France. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 164, 165.

The Phosphorite occurs in nodular masses, having a concentric agate-like structure. It is found in "pockets," sometimes over 100 feet wide, associated with mammalian remains resembling those of the gypseous deposits of the Paris Basin. W. T.

Rumpf, J. Feldspathführender Kalkstein vom Sauerbrunngraben bei Stainz. [Limestone with Felspar.] *Min. Mitt.* Heft iii. p. 207.

A felspar rich in soda occurs with muscovite, quartz, tourmaline, garnet, &c. in a granular limestone from the Sauerbrunngraben, near Stainz. F. W. R.

Rutley, F. Notes on some Peculiarities in the Microscopic Structure of Felspar. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 479–488, pls. xxiii., xxiv.

The observations recorded relate mainly to some exceptional features in the striation of felspars, involving a consideration of the extent to which dependence may be placed on the discrimination of monoclinic and triclinic felspars by the methods usually recognized in microscopic research. Some other peculiar structural features are noticed; and the effects which might be produced on polarized light by the overlap of twin lamellæ in thin sections of felspars, when cut obliquely to the planes of twinning, are considered. The conclusions mostly relate to matters of detail; but the general inference is that the present method of discriminating between monoclinic and triclinic felspars by microscopic examination answers well enough for general purposes, although it is often inadequate for the determination of doubtful examples, which are more frequent than one suspects. F. R.

Sadebeck, Dr. A. Studien aus dem mineralogischen Museum der Universität Kiel. [Studies from the Mineralogical Museum of Kiel University.] *Pogg. Ann.* Bd. clvi. pp. 554–563.

1, a new law of twinning in the regular system, observed in native iron; 2, twin-striæ on titanic iron and iron-glance; 3, twins of white lead-ore according to the law—twin-axis the normal to a face of the vertical prism $(a : 3b : \infty c)$; 4, a peculiarly-developed crystal of oligoclase from Bodenmais in Bavaria; 5, goniometric improvements.

F. W. R.

——. [Crystallography.] *N. Jahrb.* Heft i. pp. 43, 44; woodcut.

Refers to the extension of the author's researches on *Krystallotektonik*, mentioned in his essay on Galena. [See GEOLOGICAL RECORD for 1874, p. 247.] By studying subindividuals on faces of crystals he concludes, *e.g.*, that a cube in galena is to be regarded as the limiting form of the icositetrahedron, whilst a cube in fluor-spar is the limiting form of the tetrakishexahedron. F. W. R.

Sandberger, F. Ueber merkwürdige Quecksilbererze aus Mexico. [Remarkable Mercury-ores from Mexico.] *Sitz. math.-phys. Cl. k. b. Ak. Wiss.* pt. ii. p. 203.

The mineral containing antimony and mercury from Sinaloa in Mexico has been found to be a pseudomorph after antimony glance in cinnabar. A complete series of specimens shows that the form and structure of antimony glance is kept throughout. The first change seems to be into stiblite (antimony oxide), and progressively through a mixture of the latter with metacinnabarite (amorphous cinnabar) into nearly pure cinnabar. The change may have been effected by the solvent action of calcium sulphide upon sulphide of mercury from its solubility in the analogous sulphide of barium. The association of gypsum with the mineral is adduced in support of this view. H. B.

Sandberger, Prof. F. Ueber den Clarit. [Clarite.] *N. Jahrb.* Heft iv. pp. 382–388.

The new mineral *Clarite*, from the Clara Mine, near Schapbach, in the Black Forest of Baden [see GEOLOGICAL RECORD for 1874, p. 248], contains copper, 46·29; sulphur, 32·92; arsenic, 17·74; antimony, 1·09; iron, 0·83; zinc, trace; = 98·87. Its composition is therefore similar to that of some varieties of enargite; but the compound must be dimorphous, for clarite is now found to be monoclinic, not rhombic like enargite; the two species also differ in colour, hardness, &c. F. W. R.

——. [Mineralogical Notes.] *N. Jahrb.* Heft vi. pp. 624–626.

Describes a baryta-mica from the emerald-bearing mica-schist of the Habachthal in Salzburg. The mineral crystallizes in the rhombic system, and is optically uniaxial; colour white; sp. gr. 2·83. An analysis is given showing that it agrees with the Oellacherite or baryta-mica of Sterzing in Tyrol. It is notable that no soda is present. Also refers to some nodules of brown iron-ore from Mexico, partly pseudomorphous after pyrites, and remarkable for containing platinum. F. W. R.

——. [Mineralogical Notes.] *N. Jahrb.* Heft. viii. pp. 853, 854.

Refers to the occurrence of Wapplerite, Haidingerite, and Nickel-gymnite. Explains that he did not compare Luzonite with clarite, because the crystallization of the former is unknown. [See **Weisbach**, p. 263.] F. W. R.

Scacchi, —. [Crystallization of Aphthalose.] *N. Jahrb.* Heft vi. pp. 620–622; 3 figs.

Letters maintaining that the Vesuvian *Aphthalose* (*Arcanite* or *Glaserite*) is rhombohedral, and not rhombic as Vom Rath has asserted; the measurements of the latter are reconciled with the rhombohedral system by admitting Scacchi's polyhedrism. **Vom Rath** adds a note arguing that, as the figures in these letters resemble those of the twin-forms of aragonite, they support his view of the orthorhombic character of this species. F. W. R.

Scharff, Dr. Friedrich. [Indian Quartz.] *N. Jahrb.* Heft vi. pp. 626, 627.

Compares the occurrence in India with that at Oberstein; and suggests that the British Museum specimen, labelled "Aurungabad," was obtained during the construction of the railway between Bombay and

Poonah, just as the Oberstein specimens were brought to light in cutting the Rhine and Nahe line. F. W. R.

Scheerer, Dr. Theodore. An Introduction to the use of the Mouth-blowpipe; to which is added a description of the blowpipe characters of the more important minerals, by **Henry F. Blanford.** Ed. 3. Pp. x, 234. 8vo. *London.*

Schrauf, Prof. A. [Roselite.] *N. Jahrb.* Heft i. p. 55.

Maintains that Roselite contains 10 molecules of water.

——. Ueber Wapplerit. [Wapplerite.] *N. Jahrb.* Heft iii. pp. 290–293; woodcut.

Describes the crystallographic characters of Frenzel's new species *Wapplerite.* [See GEOLOGICAL RECORD for 1874, p. 232.]

Schröckinger, J. Frich. von. Ein neues fossiles Harz aus der Bukowina. [New fossil Resin.] *Verh. k.-k. geol. Reichs.* pp. 134–139; also noticed in *Journ. Soc. Arts*, vol. xxiii. no. 1194, p. 941.

Occurs in a laminated sandy bed of the Carpathian sandstone series (Cretaceous?). Differs from amber in many respects: the colour is bluish-red, melting point 326°; composition $C_{11}H_{16}O_2$. It is too tender to be worked in the lathe, &c. Analyses from several localities are given; the name *Schraufite* is proposed. E. B. T.

Schröder, Dr. H. Untersuchungen über die Volumconstitution einiger Mineralien. [Volume-constitution of certain Minerals.] *N. Jahrb.* Heft v. pp. 473–487.

Seligmann, G. [Native Red Lead.] *N. Jahrb.* Heft i. p. 46.

Records occurrence of native minium at the George Mine, Horhausen. The mineral occurs partly earthy, and partly in distinct pseudomorphs after white lead-ore. F. W. R.

Senft, Dr. Ferd. Synopsis der Mineralogie und Geognosie. I. Abth. Mineralogie. Pp. 931; 580 wood engravings. 8vo. *Hanover.*

The first section of the third part of Leunis's Synopsis of the Three Kingdoms of Nature is devoted to Mineralogy. It was originally worked out by Adolph Römer; and the present is a new issue. F. W. R.

Silvestri, O. La dissociation chimique et les phénomènes volcaniques. [Chemical Dissociation and Volcanic Phenomena.] *Rev. Sci.* pp. 565–568.

Announces the discovery, on lava from the Etna eruption of 1874, of a body having a metallic lustre, and of the composition $Fe^5 N^2$, in the form of scales adhering closely to the lava. E. B. T.

Sipöcz, L. Ueber den Lievrit. [Lievrite.] *Min. Mitt.* Heft ii. pp. 71–74.

The mean of 4 analyses of well-formed unaltered crystals of lievrite from Elba leads to the following empirical formula, which agrees with that established by Städeler, and does not support Rammelsberg's view of the constitution of the mineral:—$Si_4 . Fe''_4 . Fe'''_2 . Ca_2 . H_2 . O_{18}$.

The presence of hydrogen shows that the mineral should be removed from the group of anhydrous silicates. F. W. R.

Sismonda, —. Elementi di storia naturale. Mineralogia. [Mineralogy.] *Turin.*

Sjögren, Ant. Mineralogiska notiser. [Mineralogical Notes.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. pp. 407–410.

i. A peculiar form of hornblende crystal (with figures). ii. Discovery of Scheelite in Nordmark. iii. Occurrence of Pyrosmalite in Nordmark mines. G. A. L.

——. Observationer rörande kromjernets moderklyft. [The Matrix of Chrome-iron.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. no. 27, pp. 551–555.

Smith, Prof. J. L. Troïlite; sa vraie place minéralogique et chimique. [Troilite, its True Position mineralogically and chemically.] *Compt. Rend.* t. lxxxi. pp. 976–978.

Two analyses are given, as well as new physical details respecting troïlite, bearing out the author's opinion (opposed by M. St. Meunier) that this mineral is truly meteoric, and not to be confounded with pyrrhotine. G. A. L.

Smyth, W. W. The Ores of Iron considered in their geological relations. *Journ. Iron & Steel Inst.* pp. 43–54; Discussion, 54–59; with woodcut. Also *Iron*, vol. v. p. 714.

Mineralogical descriptions of the principal ores of iron, with remarks on their mode of occurrence.

——. Six Lectures on Mineralogy. *Coll. Guard.* vol. xxix. pp. 166, 201, 227, 272, 311, and *Min. Journ.* vol. xlv. pp. 218, 247, 270, 298, 327, 354.

Abstracts of a course of lectures at the Museum of Practical Geology.

Sohncke, L. Ueber Aetzfiguren an Steinsalzwürfeln, und über die von F. Exner angewandte Methode zur Erzeugung von Lösungsfiguren. [On Etched Figures on Rock-salt, and on Exner's Method.] *N. Jahrb.* Heft ix. pp. 938–942.

Compares the methods of Leydolt and Exner for producing these erosion-figures, and adduces reasons for preferring the former. Describes his own experiments, and gives measurements of figures etched on rock-salt. These represent various pyramidal cubes; but the author never obtained the form $(a:2a:\infty a)$, which had been described by Leydolt. The measurements were only approximate; and it is probable that the figures cannot be strictly referred to any definite pyramidal cube. F. W. R.

Spring, W. Hypothèses sur la Cristallisation. [Hypotheses on Crystallization.] *Ann. Soc. Géol. Belg.* t. ii. Mémoires, pp. 131–177.

These hypotheses are chiefly based on a consideration of the relations existing between the system in which a mineral crystallizes, its composition, and its atomic weight. A preliminary exposition only. G. A. L.

Squire, Lovell, Jun. Some observations on the Magnesite of Silesia. *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 59–70.

The magnesite, or native carbonate of magnesium, occurs in nests in serpentine, close to the surface. The principal workings are near the village of Baumgarten. The mineral is either quarried or extracted from shafts about 10 or 15 ft. deep. It is used for making carbonic acid gas for aërated waters. The author considers that the magnesite has been formed *in situ* by the decomposition of serpentine under atmospheric agencies. C. L. N. F.

Stelzner, A. [Trapezohedral Quartz.] *N. Jahrb.* Heft ix. pp. 959, 960.

Letter supporting the author's views, on the genesis of trapezohedral quartz, against remarks by Frenzel. It had been said that no compounds containing fluorine, chlorine, or boron occurred in the Schneeberg lodes, with the trapezohedral quartz; and the object of the present letter is to show that fluor-spar is found there. F. W. R.

Streng, Dr. A. [Garnets; Apophyllite.] *N. Jahrb.* Heft iv. pp. 393, 394.

On the occurrence of garnet at Auerbach in crystals showing combination of $\infty 0 . 202 . \infty 02 . \infty 0\frac{3}{2}$. Also describes the occurrence of apophyllite in colourless crystals on wollastonite, from a limestone-quarry at Auerbach. The apophyllite resulted from the alteration of wollastonite. F. W. R.

——. Ueber die Krystallform und die Zwillingsbildungen des Phillipsit. [Crystalline Form and Twinning of Phillipsite.] *N. Jahrb.* Heft vi. pp. 585–595; plate.

Crystallographic description of phillipsite from the basalt of Sirgwitz, near Löwenberg, in Lower Silesia. The crystals belong to the rare Nidda type. The author argues in favour of referring phillipsite to the monoclinic system, just as Des Cloiseaux has transferred harmotome to that system. The characters of the twin crystals are discussed in detail. F. W. R.

——. [Pyrrhotite; Stilbite.] *N. Jahrb.* Heft vii. pp. 729–731.

Refers to the occurrence of magnetic pyrites, mistaken for marcasite, with red silver ore from Andreasberg, in the Hartz. The crystals of magnetic pyrites are notable for exhibiting prismatic faces striated vertically by an alternating combination of ∞ P and ∞ P2, thus suggesting twinned rhombic prisms. Also notices the occurrence of desmine at Auerbach. F. W. R.

Struver, Giov. Sulla Gastaldite, nuovo minerale del gruppo dei bisilicati anidri. [Gastaldite, a new Mineral of the Anhydrous Bisilicate Group.] *Rome.*

Swallow, Ellen H. Analysis of Samarskite from a new locality. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 424–428.

Analysis given. Specimen from North Carolina.

——. Notes on the Chemical Composition of some of the Mineral Species accompanying the Lead Ore of Newburyport. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 462–465.

3 analyses given.

Szabo, Prof. J. Enargit njabb elöjövére Parádon. [A new Occurrence of Enargite in Parád.] *Földtani Körlöny V. K.* (6, 7, 52).

In the trachytic formation of the Mátra mountains, in Central Hungary, the enargite has been known since 1863; it is now found in other mines, and with different characters. The latter is reddish, like the famatinite of the Argentine republic. It contains so much free gold in microscopic globules, that this is more valuable than the copper. There is also a small percentage of cobalt and nickel. J. S.

Tanner, Dr. J. A. Analysis of crystallized Ammonium Oxalate from Guanapi Guano. *Chem. News*, vol. xxxii. p. 162.

Analysis of a crystalline substance found in the guano showed that it was a normal hydrated oxalate of ammonium. The name *Oxammite* has been given by Shepard to a supposed new species having a similar composition. F. W. R.

Tennant, Prof. J. Notes on Diamonds from the Cape of Good Hope. *Geol. Mag.* dec. 2, vol. ii. pp. 545–547; and *Journ. Soc. Arts*, vol. xxiii. no. 1193, p. 930.

Notes of the history of the discovery, of the mode of cutting, value, &c.

Terreil, A. Traité pratique des essais au chalumeau. [Practical Treatise on Blowpipe-analysis.] *Paris.*

Thomas, J. W. On the Gases enclosed in Coals from the South Wales Basin, and the Gases evolved by Blowers and by boring into the Coal itself. *Journ. Chem. Soc.* pp. 793–822.

Tichborne, Charles R. C. On the presence and distribution of Fluorine in Calc-spars. *Journ. R. Geol. Soc. Ireland,* ser. 2, vol. iv. part ii. pp. 82, 83.

The author, finding that fluorine is an invariable ingredient of the calcium calculi, examined minerals for it, and has found it in 5 specimens of calc-spar from different localities. He considers the small quantity found in such cases to be "entrapped." E. T. H.

——. Note on the presence of Thallium in an Iron-Ore from Prussia. *Journ. R. Geol. Soc. Ireland,* ser. 2, vol. iv. pt. ii. pp. 84, 85.

The ore is a mechanical mixture of blende and iron-pyrites. Details of the process adopted for the detection of thallium are given, with analysis of the mineral. E. T. H.

Tichborne, C. R. C. Section of Baryta mineral exhibited at the Dublin Microscopical Club. *Quart. Journ. Micr. Sci.* vol. xv. p. 332.

T. [**Prof. Tschermak.**] Bemerkung zu der Abhandlung über die Form und Verwandlung des Labradorits von Verespatak. [**Remarks** on Memoir on Labradorite from Verespatak.] *Min. Mitt.* **Heft i.** pp. 41, 42.

Correction of statement in memoir on the alteration of the Verespatak labradorite. [See GEOLOGICAL RECORD for 1874, p. 254.] The pseudomorphs consist mainly of potash-mica and pyrophyllite. **F. W. R.**

——. Anhydrit vom Semmering. [Anhydrite from the **Semmering.**] *Min. Mitt.* Heft iv. p. 309.

Note on the occurrence of anhydrite in gypsum at the Semmering, in Lower Austria.

——. Das Krystallsystem des Muscovits. [Crystalline System of Muscovite.] *Min. Mitt.* Heft iv. pp. 309, 310.

Optical examination of crystals of muscovite from the Lower Sulzbachthal, in the Pinzgau, and from Bengal, point to the monoclinic system for the crystallization of this species. **F. W. R.**

Tschermak, G. Apatit von Untersulzbach. [Apatite of Untersulzbach.] *Min. Mitt.* Heft iii. p. 208.

In exploring the epidote-locality of the Untersulzbach, some crystals of apatite of unusual size have been found. They are colourless and transparent, but usually contain fine acicular crystals of hornblende. Their form is tabular through predominence of the basal pinacoid. **F. W. R.**

Ulrich, G. H. F. [Australian Minerals.] *N. Jahrb.* **Heft** iii. pp. 287, 288.

Letter on discoveries in Victoria, chiefly on *Maldonite* or bismuth-gold (Au_2Bi).

Ure, —. Dictionary of Arts, Manufactures, and Mines. By **Robert Hunt, F. W. Rudler,** and many contributors. Ed. 7. 3 vols. 8vo. *London.*

Contains throughout notices of minerals used in the arts, classified alphabetically.

Vélain, Ch. Analyse des dégagements gazeux de l'île Saint-Paul. [Analysis of the Gaseous Emanations of St. Paul's Island.] *Compt. Rend.* t. lxxxi. pp. 332–335.

Analyses of gas from various spots on the island, and of sea-water.

Vennor, Henry G. Notes on some of the Galena or sulphuret of lead deposits connected with the Laurentian rocks of Ontario. *Canad. Nat.* n. s. vol. vii. pp. 455–462.

The galena occurs in true veins, which traverse great areas of the crystalline Laurentian limestones.

Villada, M. M. El Tequezquite. Estudio del Sr. D. Manuel Montaño Ramiro, publicado en el Año de 1870, como tesis para su Examen profesional de Farmacia; dispuesto bajo un Orden distinto y con algunas Ampliaciones. [Tequezquite; a Thesis by Sen. D. M. Montaño Ramiro in 1870.] *Naturaleza*, t. iii. nos. 12, 13, pp. 239-246.

Tequezquite is a corruption of the Mexican *Tequixquitl*, meaning "something like a stone." It is a mineral substance consisting of a mixture of salts, especially carbonate of soda and chloride of sodium, the natural production of several lakes in Mexico. F. W. R.

Voelcker, Prof. A. On the Chemical Composition of Phosphatic Minerals used for Agricultural Purposes. *Journ. R. Agric. Soc.* ser. 2, vol. xi. pp. 399-435. (Supplementary to a paper in vol. xxi.)

Gives analyses of "Coprolites" from various districts:—*French*, from near Boulogne [U. Greensand]; Bellegrand, in valley of the Rhône; and Department of the Lot (Bordeaux Phosphate). *Russian*, Department of Koursk. *Cambridge* [U. Greensand]; *Bedfordshire* [L. Greensand] and Phosphatic Wood. *Welsh*, from Llandeilo Beds at Cwmgynen. *Canadian*. *Spanish*, from Caceres and Montanchez. *Nassau* (Staffelite). *Charlestown* (geological notes from **Prof. Tuomey** and **Dr. Pratt**). *Sombrera*, *Navassa*, *St. Martin*, Windward Isles. *Aruba*, Leeward Isles. *Redonda*. *Alta Vela*, St. Domingo. W. T.

Weisbach, Dr. [Mineralogical Notes.] *N. Jahrb.* Heft vi. p. 627.

Calls attention to the fact that the growth of quartz with calcite at Schneeberg, in Saxony, described by Frenzel [p. 241] was well known to the Freiberg mineralogists. Complains that Sandberger in describing *Clarite* [p. 257] makes no allusion to Weisbach's Luzonite. F. W. R.

——. Synopsis Mineralogica: systematische Uebersicht des Mineralreiches. Pp. 78. 8vo. *Freiberg.*

The following classification of minerals is employed in this synopsis (retaining the German forms of the group-names):—I. *Hydrolite* (Salts) II. *Lithe* (Stones),—1. Kuphoxyde, 2. Pyritite (Silicates), 3. Apyritite, III. *Metallite* (Ores),—1. Halometallite, 2. Metalloxyde, 3. Metallo, 4. Thiometallite. IV. *Kauste* (Combustibles),—1. Thion, 2. Anthracite, 3. Asphaltite, 4. Retinite, 5. Paraffine. F. W. R.

Wiik, F. J. Mineralogiska och petrografiska meddelanden. [Mineralogical and Petrological Contributions.] See also p. 224.

Describes several serpentinous and chloritic minerals from Lupikko and Orijaervi, in Finnland, including metaxoite, picrofluite, marmolite, scotiolite, and hisingerite. F. W. R.

Willcox, Joseph. On Samarskite. *Proc. Ac. Nat. Sci. Philadel.* pt. ii. p. 263.

Found a specimen in N. Carolina weighing 20 pounds.

Williams, Charles P. Note on the occurrence of Antimony in Arkansas. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 150, 151.

Note on the discovery of stibnite in association with galena in Servier Co., in S.W. Arkansas. The mineral contains, in addition to sulphide of antimony, small quantities of bismuth, arsenic, and iron. F. W. R.

Wurtz, Dr. Henry. Preliminary Note upon the Carbonite, or so-called "Natural Coke" of Virginia. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 456–458.

According to the writer's examination of this substance it is a peculiar coal, and has not been altered to coke.

Young, C. A. The Occurrence of Celestine in Blair County, Pennsylvania. *Proc. Ac. Nat. Sci. Philadel.* pt. i. pp. 127, 128.

Occurs in beds of irregular thickness (up to nearly an inch) in a hard limestone slate.

Zepharovich, Ritter von. Mineralogische Mittheilungen. *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. I. Bd. lxxi. pp. 253-282, 3 plates, 8 woodcuts.

1. *Aragonite* crystals from Eisenerz and Hüttenberg. Crystals from the first locality are noticeable for deficiency of brachydomes with a higher value of the chief axis than 4, &c. Many new faces are observed and tabulated; from the second locality they are in ankerite-cavities on the borders of the siderite deposit, and are mostly polysynthetic; further new faces are described. 2. *Arsenic* crystals from Joachimsthal —needles 1·5 mm. long and ·5 mm. broad, with appearance of a rhombic prism surmounted by a flat brachydome, being rhombohedral twins. Analysis, 90·6 arsenic, 4·6 nickel, with some iron and trace of antimony. 3. Crystalline forms of *Cronstedtite.* From Přibram were measured scalenoedra; also a hemimorphic form of basal pinacoid with acute rhombohedron, $0R(111):3R(7\bar{2}\bar{2})=85°\cdot3\frac{1}{2}'$ mean of several localities, but is not considered so reliable as Maskelyne's original measurement of Cornish crystals. E. B. T.

——. Mineralogische Notizen vom Hüttenberger Erzberge in Kärnten. [Mineralogical Notices of Ores from the Hüttenberg, Carinthia.] *Prague.*

Zerrenner, Carl. Bemerkungen zur Terminologie. [Remarks on Terminology.] *Min. Mitt.* Heft i. pp. 35–39.

Suggestions for classification of different kinds of crystals which exhibit layers or coats (Krystallschalen), such as capped quartz.

——. Silberglanz. *Min. Mitt.* Heft i. p. 40.

Note on the crystalline form of specimens of silver-glance.

——. Dichroit. *Min. Mitt.* Heft i. p. 40.

Announces the occurrence of twin crystals of dichroite at Bodenmais, in Bavaria.

Zerrenner, Carl. Bleiglanz. *Min. Mitt.* Heft i. p. 40.

Describes a peculiar crystal of galena from the Himmelsfürst mine, near Freiberg, Saxony.

——. Tourmalin, schwarz, spiessig. *Min. Mitt.* Heft i. p. 40, 41.

On crystals of black tourmaline with pointed extremities, from the Hörnelberg and other localities.

Zirkel, F. [Leucite from Dutch East Indies.] *N. Jahrb.* Heft ii. pp. 175, 176.

Describes the occurrence of leucite in a basaltic rock from the little island of Bawean, near Java. In microscopic sections it presents the characteristic 8-sided forms from combination of (P . 4P2). It is associated with plagioclase, augite, magnesia-mica, and apatite. F. W. R.

——. [Mineralogical Notes.] *N. Jahrb.* Heft vi. pp. 628, 629.

Calls attention to the occurrence of tourmaline in the schists of the Taunus group, and to a microscopic brownish-yellow mineral in Saxon granulites, which is probably zircon. Prismatic crystals of a mineral believed to be zircon are widely distributed through the garnet-bearing mica-schists of the Erzgebirge. F. W. R.

Zschau, E. On a number of Minerals collected during a tour in Saxony. *Sitz. Isis, Dresden.*

See also:—

Davies, D. C. Phosphorite, N. Wales, Analyses: p. 11.

Frazer, Prof. P. Microphotography of Minerals: p. 120.

Hunt, Dr. T. S. Chemical and Geological Essays: *post*, under GENERAL, &c.

Liversidge, A. Bingera Diamonds, &c.: p. 155.

Mongel, L. Fossil Bitumen, Kurdistan: p. 140.

Newton, H. Analyses of iron-ores, N. America: *post*, under GENERAL.

Ormerod, G. Murchisonite: p. 32.

Pechin, E. C. Analyses of iron-ores, Pennsylvania: *post*, under ADDENDA.

Phillips, J. A. Rocks of Cornwall: p. 34.

Prime, Prof. F. Hematite Deposits of the Great Valley. Analysis of damourite (hydrated potash-mica): p. 128.

Smith, Dr. E. A. Various analyses. *Dudleyite* (new mineral): p. 130.

Verbeek, R. D. M. Minerals of part of Borneo described: p. 168.

Ward, J. C. Lake District; Liquid-cavities in Quartz: p. 42.

——. Volcanic Rocks. Describes their minerals: p. 223.

Wright, B. M. Mineralogy of Carlisle, Gilsland, &c.: under **Jenkinson**, p. 24.

——. Mineralogy of Lake District: ditto.

——. Mineralogy of I. of Man: ditto. Supplement for 1874.

MINERAL WATERS.

Andrews, Dr. Analysis of the Sulphur Well, Ballynahinch Spa. *Chem. News*, vol. xxxii. p. 65, and *Proc. Belfast Nat. Hist. Soc.* Session 1874–75, pp. 86, 87.

The saline constituents are insignificant; and the active properties of the water are due to the presence of sulphides and carbonic acid.

Anon. Guide to Spa, with a comparative analysis of the waters. 122 pp. 32mo. *Spa.*

Audouard, —. [Analysis of Ferruginous Water from Beaupréau, Maine-et-Loire.] *Rev. Géol.* t. xii. p. 37, 38. See also *Journal de Pharmacie*, t. ix. p. 336.

Analysis of sediment deposited by this water gives the following percentage composition: Fe^2O^3, 50·25; Al^2O^3, 2·28; CaO, 1·30; MgO, 0·49; $Si\,O^2$, 41·11; organic matter, 4·57. G. A. L.

Fresenius, R. Analyse des Grindbrunnens bei Frankfurt am Main. *Journ. prakt. Chem.* N. F. Bd. xii. pp. 400–416.

Essay on the Grindbrunnen, near Frankfort-on-the-Main. Gives a history of the spring; then describes its geological relations, its physical characters, and its chemical composition. An original analysis of the water is given, and the results are compared with those of previous analysts. The Grindbrunnen is strongly hepatic, with a high proportion of chloride of sodium, bicarbonate of soda, and bicarbonates of alkaline earths. It is further notable for containing bromide and iodide of sodium and carbonate of lithia. F. W. R.

Gerini, Carlo. Delle acque solforose-alcaline-cloro-jodurate-iposolfitiche-magnesiache della sorgente di mont' Alfeo, etc. [The Mineral Waters of Mont Alfeo.] 12mo. *Sondrio.*

Gorceix, H. [Greek Mineral Springs.] *Rev. Géol.* t. xi. pp. 36–38.

Describes the mineral waters of Œdipsos, at the N. end of Eubœa; these have boiling water temperature; gas escaping from them composed thus — HS traces, CO_2 73, O 6, N 21. Describes also the mineral spring of Karytsa, in Thessaly; and mentions those of the Pelion hills. G. A. L.

Hayes, A. A. On the wide diffusion of Vanadium and its association with Phosphorus in many rocks. *Chem. News*, vol. xxxi. pp. 166–168, vol. xxxii. pp. 34-36.

Vanadium has been found in the water supplying the wells of Boston, Brooklin, U. S. A.

Heriot, Capt. M. The Bath Waters. *Proc. Bath Field Club*, vol. iii. no. 2, pp. 163–170.

Chiefly devoted to an inquiry into the composition of the different mineral springs of Bath. Gives analyses of waters from the Roman Baths, King's Baths, Hetling Pump, and Cross Baths, which show that the four springs which supply these Baths, though not artificially connected, are derived from the same natural source. The waters of the Hetling and Cross Baths are stronger in their mineral constituents than those of the two other Baths; all show a daily variation, especially in the amount of chlorine contained in them. The writer thinks it is a question for consideration, whether the action of water, under high temperature and pressure, on carbonaceous residue, might not account for the large quantity of carbonic acid gas given off by mineral springs, or whether the internal heat of the earth may not have some decomposing action on the lower lying limestones. H. B. W.

——. The Mineral Spring at Batheaston. *Proc. Bath Field Club*, vol. iii. no. 2, pp. 171–177.

This spring rises through an old mine-shaft, now covered up, and passes by an underground passage to an opening at the bottom of the hill, discharging itself into the brook, at the rate of some 300 gallons an hour. The writer gives an analysis of the water, comparing it with that of the King's Bath. H. B. W.

Hunt, [Dr.] T. S. On the Boston Artesian Well and its Waters. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 486–488.

The boring is 1750 feet deep. The water contains chlorides.

Johnstone, W. Analysis of Moffat and Hertfell Spas, collected on the 5th and 12th October 1874. *Chem. News*, vol. xxxi. p. 15.

Complete analyses of both solid and gaseous constituents, with sp. gr. and temperature.

——. Analysis of the Airthrey Springs, at Bridge of Allan. *Chem News*, vol. xxxi. p. 88.

Complete analysis of sample of water taken on 7th March, 1874.

Laloy, Roger. Sur les chlorures alcalins du terrain houiller [Alkaline Chlorides of the Coal Measures.] *Ann. Soc. Géol. Nord* t. ii. pp. 195–197.

Thinks that the salt water met with in the Coal Measures is due t old sea-water, and not to the minute amounts of salt which analysi reveals in the composition of Coal Measure rocks. In answer to paper by **M. Malherbe** (see below). G. A. L

Malherbe, R. Des chlorures alcalins de la formation houillère. [Al kaline Chlorides of the Coal Measures.] *Bull. Ac. Roy. Belg.* 2 sér t. xxxix. pp. 16–25.

Analysis of salt water from coal-pits in Belgium are given, and als of the sandstone whence it issues. Both the stone and water contai chlorides; and the author believes that the latter owe their saltness to the former, and are not, as has been urged, the relics of the sea-water of the period. [Reports on this communication by Messrs. **de Koninck** and **Dewalque**, pp. 9–11, of same vol.] G. A. L.

Reichardt, D. E. Grundlagen zur Beurtheilung des Trinkwassers, zugleich mit Berücksichtigung seiner Brauchbarkeit für gewerbliche Zwecke; nebst Anleitung zur Prüfung des Wassers. [Estimation of the Potable and Technical Value of Water, with Instructions for Testing.] 2. Auflage. Pp. 107, one plate, many woodcuts. 8vo. *Jena.*

Schmidt, Prof. K. [Chemical Analysis of the Water in Kuku-noor (in Russ.).] *Tswestija Imp. Russ. Geogr. Soc.* Bd. x. no. 8.

Studdert, L., and **W. Plunkett.** On the Constituents of the two principal Mineral Waters of Lisdoonvarna, County of Clare. *Proc. R. Irish Ac.* vol. ii. ser. ii. (Science) pt. 3, pp. 189–192.

Analysis of the waters of the Gowlaun Spa, and of the Rathbawn Chalybeate Spa, are given. The authors concur with Mr. Foot that the presence of sulphur and iron in the spas is due to the decomposition of iron-pyrites in the Carboniferous shales near Lisdoonvarna. The presence of lithia in the Gowlaun water was ascertained. E. T. H.

Swallow, Ellen H. On the occurrence of Boracic Acid in Mineral Waters. *Proc. Boston Nat. Hist. Soc.*, vol. xvii. pp. 428–430.

From Billis (Turkey), Colorado, Nevada, Wyoming, Maine, and Nova Scotia. Analyses given.

Tietze, Dr. E. Ueber Quellen und Quellenbildungen am Demavend und dessen Umgebung. [Mineral Waters of Demavend, Persia.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft 2, pp. 129–140.

Describes many springs both hot and cold, and the relation of the calcareous and trachytic tuffs to the older rocks, Lias, &c.

Voelcker, Dr. A. On the Composition and Properties of Drinking-water and Water used for General Purposes. *Journ. R. Agric. Soc.* ser. 2, vol. xi. pp. 127–162.

Vohl, H. Vorläufige Notiz über die Bestandtheile der Mineralquelle zu Birresborn in Regierungsbezirk Trier. [Preliminary Notice on the Constituents of the Mineral Spring at Birresborn in the District of Treves.] *Ber. deutsch. chem. Ges.* pp. 611–612.

This spring was used medicinally by the Romans. A complete analysis is given. The Birresborn mineral water is found to be the richest in lithium known, containing ·38016 gram of bicarbonate of lithia per litre. F. W. R.

Volhard, Herr. Analyse des Schwefelwassers von Bir Keraui, in der Libyschen Wüste. [Analysis of the Hepatic Water of Bir Keraui, in the Libyan Desert.] *Sitz. math.-phys. classe k. bay. Ak. Wiss.* Bd. v. pp. 19–38.

Wanklyn, J. A. On the Variations in the composition of Rive Waters. *Chem. News*, vol. xxxii. p. 207.

Analyses of the water of the Nile show that in June, when the rive is beginning to rise, it contains only 1·8 grain of chlorine per gallon but when it attains its greatest size, the chlorine sinks to 0·3 or 0·4 grai per gall., and continues low until the end of the year. This enormou diminution in the chlorides is attributed to the fact that the Nile i swollen with storm-water, which sweeps over the surface of the countr without penetrating far below the surface, and thus carries down littl or no salt. The hardness of the water remains constant. The wate of the Nile contains as much organic matter as the Thames at Hampto Court, but has only about half the hardness of London Thames wate

F. W. R

——. Note on the Changes in River-waters. *Chem. News*, vol xxxii. p. 219.

The water of the Thames at Hampton Court contained, in Nov 1875, only 0·88 grain of chlorine per gall., the usual proportion bein 1·2 grain. F. W. R

Watson, W. H. Analysis of Chalybeate Water from a spring a Sellafield, near Whitehaven. *Chem. News*, vol, xxxii. p. 11.

Complete analysis of sample collected June 2, 1875.

——. Note on the Chalybeate Water at Sellafield, near Whitehaven *Chem. News*, vol. xxxii. p. 309.

Traces the origin of the spring to drainage through a clayey soi containing ferrous and manganous oxides, whence the cause of it chalybeate character. Analysis of the clayey earth is given.

F. W. R

See also:—

Prof. Peters and — **Clar.** Mineral Springs of Gratz: under **Ilwol** p. 74.

PALÆONTOLOGY.

1. *VERTEBRATA.*

Adams, Prof. A. L. On a fossil Saurian Vertebra (*Arctosaurus Osborni*) from the Arctic Regions. *Proc. R. Irish Acad.* ser. ii. vol. ii. pp. 177–179 (woodcut).

From Rendezvous Point, Byam Martin Channel. "The bone may in all probability have been one of the middle cervicals of a Saurian with biconcave vertebræ." L. C. M.

Andrews, Prof. Edmund. Dr. Koch and the Missouri Mastodon. *Amer. Journ.* ser. 3, vol. x. pp. 32–34.

Brings forward more evidence adding to the incredibility of Dr. Koch's statement. (See *post.*)

Anon. A new Mastodon. *Amer. Journ.* ser. 3, vol. ix. p. 222.

Note announcing the discovery, by Prof. Cope, in Pliocene deposits of Santa Fé, of a new species, *M. productus* (= *M. obscurus*, Leidy).

——. Mastodon of Otisville, Orange County, N. Y. *Amer. Journ.* ser. 3, vol. ix. p. 483.

Note of discovery in swamps of this district.

——. The Moas of New Zealand. *Nature*, vol. xi. pp. 289–290, (woodcut).

The tarsal scales of *Dinornis ingens*, Otago, are described and figured.

——. Discovery of the Horns of an extinct species of Ox in Ohio. *Amer. Journ.* ser. 3, vol. x. p. 386.

Note of occurrence of large horn-cores (22 inches in circumference), in gravel, Brush Creek, Adams County.

——. Another New York Mastodon. *Amer. Journ.* ser. 3, vol. x. p. 390.

Note of occurrence at Lisle, near Binghampton.

Atthey, Thomas. On the Articular Bone and supposed Vomerine Teeth of *Ctenodus obliquus*; and on *Palæoniscus Hancocki*, n. sp., from the Low Main, Newsham, Northumberland. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 309–312, pl. xix.

Bachmann, Isidor. Beschreibung eines Unterkiefers von *Dinotherium bavaricum.* [Lower Jaw of *D. bavaricum.*] *Abh. schweiz. pal. Ges.* vol. ii. pp. 18; 1 plate.

This finely preserved lower jaw of *Dinotherium* was found in the

Bernese Jura, near Delsberg, in the fluviatile beds of the Œningen s (L. Miocene).

Barkas, W. J. Microscopical Structure of Fossil Teeth from Northumberland True Coal Measures. *Monthly Review of D* *Surgery*, pp. 256, 328, 439, 484, 534; 3 plates.

Barrois, Charles. Les Reptiles du terrain crétacé du N.E bassin de Paris. [Cretaceous Reptiles of N.E. of Paris Ba *Ann. Soc. Géol. Nord*, t. ii. p. 11.

12 sp. of *Plesiosaurus*, *Polyptychodon*, *Pliosaurus*, *Ichthyosau* *Megalosaurus*, *Hylæosaurus* and *Pterodactylus* found in the Gault (Z of *Ammonites mammillaris*). In L. Chalk are *Chelone* sp. and *P* *dactylus giganteus*; in the U. Chalk of Cissy, *Mosasaurus* and anothe
A. J.

——. On *Byssacanthus Gosseleti*. *Ann. Soc. Géol. Nord*, t. ii 200, 201.

Describes under this name a new plagiostomous fish from U. D nian, Couvin.

Beneden, P. J. van. Le squelette de la Baleine fossile du M de Milan. [Skeleton of the Fossil Whale in the Milan Muse *Bull. Ac. Roy. Belg.* ser. 2, t. xl. pp. 736–758; plate.

The specimen, 21 feet long, found on the E. flank of Monte gnasco at a height of 1800 feet above the plain, was described figured first by Cortesi and next by Cuvier. It is described in de and compared with other Italian specimens, the synonyms bein follows:—*Rorqualus Cortesii*, Capellini, 1865; *Cetotherium* (C *theriophanes*), Brandt, 1873, 74; *Plesiocetus*, Van Beneden and Gerv *Cetotheriophanes Capellinii*, Capellini, 1875.
G. A

——. Un Oiseau Fossile Noveau des Cavernes de la Nouv Zélande. [New Fossil Bird from Caves of New Zealand.] *Jo* *Zool.* vol. iv. pp. 267–272.

A description of the bones of a Duck from the Earnscleugh c Otago, found with *Dinornis* and other bones. They are said to affinities with the recent *Anas clangula*, and to resemble in s particulars the *Anas Blanchardi*. This extinct duck is named *Finschi*.
E. T

Beneden, P. J. van, and Prof. Paul Gervais. Ostéographie des Cé vivants et fossiles. [Osteology of Living and Fossil Ceta Part 13, pp. 409–456; 2 pls. 4to. *Paris*.

Tertiary Ziphioids. *Choneziphius planirostus* is described, and following species of *Ziphirostrum*—*Z. turninense*, *Z. tumidum*, *Z.* *ginatum*, *Z. lævigatum*, *Z. gracile*. The description of the follo genera and species succeeds:—*Aporotus recurvirostris*, *A. affinis* *dicyrtus*, *Ziphiopsis phymatodes*, *Z. servatus*, *Placoziphius Dub* *Dioplodon recurvus*, *D. longirostris*, *D. Becanii*, *D. gibbus*, *D. angu* *D. angulatus*, *D. medilineatus*, *D. tenuirostris*, *D. compressus*. U the general group of *Delphinorhynchi* are described the remains of the genus *Squalodon*, which have been found in France, England, Austria, Wurtemberg, Italy, America and Australia. The genera *Phocodon* and *Platanista* are next described. E. T. N.

Böckh, J. *Brachydiastematherium transilvanicum*, Bkh. et Maty, ein neues Pachydermen-Genus aus eocänen Schichten Siebenbürgens. [New Genus of Pachyderms from Eocene of Transylvania.] *Jahrb. k. ung. geol. Anst.* Bd. iv. Heft ii.; plates. In Hungarian and German.

Describes the lower jaw, found near Andrásháza, Klausenburg. The teeth do not agree with those of any genus of Palæotherioids.

Bourguignat, J. B. Recherches sur les Ossements de *Canidæ* constatés en France à l'état fossile pendant la période Quaternaire. [Quaternary Fossil Canidæ.] *Ann. Sci. Géol.* t. vi. livr. 3, pp. 60; 3 plates.

The genus *Cuon* has 6 molars, while *Canis* has 7, in the lower jaw. *Cuon europæus*, n. sp., was larger and had more carnivorous teeth than the recent *C. primævus* of India. *C. Edwardsianus*, n. sp., from Lunel-Viel, is nearer the recent species *Lycorus nemesianus*, n. gen. and sp., differs from *Cuon* in having only 3 premolars. A review of French fossil Canidæ, with a list of species from Cave-deposits, including *Lupus* 3 sp., *Vulpes* 2 sp., &c. E. B. T.

Brandt, Prof. J. F. On the Fossil Whales of Europe. *Coll. Guard.* vol. xxix. pp. 263, 264. Abstract of paper in *Mém. Ac. Imp. Sci. St.-Pétersbourg*, sér. 8, t. xxi. no. 1.

——. Einige Bemerkungen über die bisher in Russland aufgefundenen drei verschiedenen Arten angehörigen Reste ausgestorbener Nashörner. [Rhinoceroses found in Russia.] *Bull. Ac. Imp. Sci. St.-Pétersbourg*, t. xxi. pp. 81–84.

Brooke, Sir Victor. On the Existence of the Fallow Deer in England during Pleistocene Times. *Nature*, vol. xi. pp. 210, 211.

Believes the Pleistocene species *Cervus Brownii* to be identical with *C. dama*, but thinks it possible that the latter (Fallow Deer) became extinct in N. Europe before the advent of Prehistoric Man, and was reintroduced by the Romans. C. E. De R.

Burrows, H. A. A probable Origin of the Perforations in Sharks' Teeth from the Crag. *Proc. Geol. Assoc.* vol. iv. no. 3, pp. 164–166.

In recent sharks' teeth there is a foramen for the blood-vessel; and on the opposite side of the tooth there are numerous small holes. If the fossil teeth, when fresh, were similar to these, subsequent friction or partial solution of the tooth may have formed a hole here. All perforated teeth are from the upper jaw. W. T.

Busk, Prof. George. List of the Mammalian Remains collected by the Rev. J. M. Mello in the Rock-Fissure Cavern in Creswell Crags, Derbyshire. *Quart. Journn. Geol. Soc.* vol. xxxi. pp. 683–691, 4 woodcuts. Appendix to paper by **Rev. J. M. Mello**: see p. 30.

The following species have occurred:—*Ursus* (probably *ferox*), *Hyæna spelæa*, *Canis lupus*, *C. vulpes*, *C. lagopus* (axis), *Gulo luscus* (pelvis), *Bos primigenius*, *Cervus tarandus*, *C. megaceros*, *Ovis aries*, *Equus caballus*, *Rhinoceros tichorinus*, *Elephas primigenius*, *E. antiquus* (?). The Arctic fox (*Canis lagopus*) has not been previously found in any British cave. The bones of the sheep appear to be recent. L. C. M.

Capellini, Prof. G. Sui Cetoterii bolognesi. [The Bolognese Cetotheria.] *Mem. Ac. Sci. Bologna*, ser. iii. t. v. pp. 34, 2 plates.

Cope, Prof. Edward D. Synopsis of the Extinct Batrachia from the Coal Measures. *Geological Survey of Ohio*, vol. ii. Palæontology, pp. 348–411, pls. xxvi.–xlv.

Gives a synoptical and detailed account of the remains of Batrachians found in the Coal Measures of Ohio, embracing 34 species, referred to 17 genera. After reviewing the general characters of the Batrachia as a class, and defining its orders, proceeds to define the order *Stegocephali* [=*Labyrinthodontia*], and defines 5 families of it. Describes the genus *Cocytinus*, with the single species *C. gyrinoides*, and the genus *Thyrsidium*, with the species *T. fasciculare*, as both doubtfully referable to the *Proteida*. Amongst the *Stegocephali*, the genera *Phlegethontia*, *Molgophis*, *Pleuroptyx*, *Ceraterpeton*, *Ptyonius*, *Œstocephalus*, *Hyphasma*, *Brachydectes*, *Pelion*, *Tuditanus*, *Leptophractus*, *Eurythorax*, *Sauropleura*, and *Colosteus* are treated of; and the following are described as new, in addition to previously known forms:—*Molgophis macrurus*, *M. brevicostatus*, *Pleuroptyx clavatus*, *Ceraterpeton tenuicorne*, *Ptyonius nummifer*, *Hyphasma lævis*, *Tuditanus mordax*, and *Sauropleura Newberryi*. A short appendix treats of genera probably referable to Fishes, namely—*Peplorhina*, with the species *P. anthracina*, and *Ctenodus*, with the species *C. ohioensis*. H. A. N.

——. The Vertebrata of the Cretaceous Formations of the West. *Rep. U. S. Geol. Surv. Territories*, vol. ii. pp. 1–302, pls. i.–lvii.

Contains, besides prefatory matter, descriptions of the Cretaceous Reptilia and Fishes of the Western Territories, and a synopsis of the Cretaceous Vertebrata of N. America. The following genera (except last two) and species are new:—Dinosauria: *Cionodon stenopsis*. Testudinata: *Osteopygis erosus*, *Plastomenus coalescens*, *P. costatus*, *Compsemys ogmius*, *Toxochelys serrifer*. Pisces: *Pelecopterus chirurgus*, *Portheus arcuatus*, *Enchodus dolichus*, *E. oxytomus*, *E. tetræcus*, *Leptomylus forfex*, *Bryactinus amorphus*, *Diphrissa latidens*, *Ischyodus stenobryus*, *I. tripartitus*, *I. longirostris*, *I. eocænus*, *I. incrassatus*, *I. fecundus*, *Isotænia neocæsariensis*, *Ptychodus papillosus*, *Lamna macrorhiza*, *L. Mudgei*.

Though there is comparatively little altogether new in this volume, many of the genera and species appear for the first time with adequate description and illustrative plates. The most important parts of the text relate to *Elasmosaurus*, a Plesiosaurian; to the author's order *Pythonomorpha*, including *Liodon* and *Clidastes*, forms allied to *Mosa-*

saurus, and now shown to possess pectoral and ventral limbs; and to *Portheus molossus*, a great carnivorous physostomous fish, with osseous ventral rays, a doubly articulated pectoral spine, and powerful, unequal, cylindrical teeth. The order *Actinochiri* is proposed to receive certain forms whose pectoral limb only is known. The scapula supports a close row of six thin basilar bones, besides an anterior pair; and these in turn support a large pectoral spine, longitudinally ridged, with straight or serrate posterior border. L. C. M.

Cope, Prof. E. D. Systematic Catalogue of Vertebrata of the Eocene of New Mexico, collected in 1874. Engineer Dept., U. S. Army.

The development of the carnassial teeth of carnivora is traced from Eocene forms with comparatively numerous quadrituberculate sectorial teeth to the Felidæ, in which the anterior external tubercle alone of the primitive tooth can be identified. The unspecialized extremities of Eocene carnivora are noted. New Species:—*Carnivora*: Ambloctonus sinosus, Prototomus secundarius, P. multicuspis, P. strenuus, Diacodon (n. gen.) alticuspis, D. celatus. *Genera incertæ sedis*: Pelycodus frugivorus (Quadrumana), P. angulatus, Pantolestes chacensis (Quadrumana ?), Opisthotomus (gen. nov.) astutus (Quadrumana ?), O. flagrans, Antiacodon mentalis, A. crassus. *Perissodactyla*: Hyrachus singularis, Orohippus tapirinus, O. angustidens, O. cuspidatus. *Amblypoda* (a new order, to include Bathmodon, Loxolophodon, and Uintatherium) Bathmodon latidens, B. cuspidatus. *Crocodilia*: Diplocynodus sphenops, Crocodilus grypus, C. Wheeleri. *Testudinata*: Dermatemys (?) costillatus. L. C. M.

——. The extinct Batrachia of Ohio. *Proc. Ac. Nat. Sci. Philadel.* p. 16.

A notice of the new genus and species *Pleuroptyx clavatus*, with processes from the posterior edges of the ribs, of *Hyphasma lævis* (n. gen. and sp.), and of *Ceraterpeton punctolineatum* (n. sp.). L. C. M.

——. On Greensand Vertebrata. *Proc. Ac. Nat. Sci. Philadel.* p. 19.

Gavials from New Jersey. Many new chimæroid fishes, about twenty to be published in a special monograph.

——. On the Homologies of the Sectorial Tooth of Carnivora. *Ibid.* p. 20.

The substance is given in "Systematic Catalogue, &c." See above.

——. The Feet of *Bathmodon*. *Ibid.* p. 73.

Order *Amblypoda* proposed. See above.

——. On Fossil Lemurs and Dogs. *Proc. Ac. Nat. Sci. Philadel.* p. 255.

Sarcolemur (n. gen.) proposed, to include *S. furcatus* (*Antiacodon*, Cope), *S. pygmæus*, and *S. mentalis*, lemurs, from the Eocene of the Rocky Mountains, having relations with *Procyonidæ*. Mandible of a Pliocene dog (*Canis ursinus*, n. sp.). L. C. M.

Cope, Prof. E. D. On the Antelope-Deer of the Santa Fé Marl *Proc. Ac. Nat. Sci. Philadel.* p. 257.

——. On some new fossil Ungulata [from New Mexico]. *Ibi* p. 258.

Pliauchenia (n. gen. of *Camelidæ* from the Loup Fork beds) is supposed to be represented by a mandibular ramus and maxilla, referre to different species (*P. humphresiana* and *P. vulcanorum*). The dentition is given as I. $\frac{\ }{?}$, C. $\frac{\ }{1}$, Pm. $\frac{4}{3}$, M. $\frac{3}{4}$. *Hippotherium calamarium* (n sp.) is a thick-toed horse allied to *H. paniense*. A mandibular ramus o rhinoceros is described as *Aphelops jemezanus* (n. sp.). L. C. M

——. The Phylogeny of the Camels. *Proc. Ac. Nat. Sci. Philadel* p. 261.

The series is traced from *Poëbrotherium* of the Miocene, throug *Procamelus* and *Pliauchenia* to *Auchenia*.

——. On an extinct Vulturine Bird. *Proc. Ac. Nat. Sci. Philade* p. 271.

The skeleton (from Loup Fork marls, near Santa Fé) had been de scribed as *Cathartes umbrosus*, but is now referred to the vulturin division of the *Falconidæ*. A short bony septum is present at the bas of the beak. L. C. M

——. On fossil remains of Reptilia and Fishes from Illinois. *Pro Ac. Nat. Sci. Philadel.* p. 404.

Caudal vertebræ with notochordal foramen are supposed to indicate Rhynchocephalian (*Cricotus heteroclitus*, n. gen. and sp.). Other bone chiefly of limbs, are attributed to the same. *Clepsydrops collettii* (r gen. and sp.) is represented by cervical, dorsal, and caudal vertebra together with bones of the fore limb. This genus is considered mor typically Rhynchocephalian than *Cricotus*. *Ceratodus Vinslovii* (n. sp. and a *Diplodus* were found associated with the others. L. C. M

——. On the supposed Carnivora of the Eocene of the Rock Mountains. *Proc. Acad. Nat. Sci. Philadel.* 3 ser. vol. v. pp. 444-448.

Amblоctonus, *Stypolophus*, *Oxyæna*, and *Didymictis*, though carni vorous in habit, appear to differ from true Carnivora in the crania cavity, the tibio-tarsal articulation, and the presence of a third tro chanter. A new suborder of Insectivora (*Creodonta*) is proposed fo them, and Marsh's *Tillodontia* are placed in the same order. L. C. M

——. Note on the genus *Calamodon*. *Amer. Journ.* ser. 3, vol. ix pp. 228, 229.

Denies that this genus is the *Stylinodon* of Marsh, provided th latter's diagnosis of his genus be accurate.

——. On the Fishes of the Tertiary Shales of the South Park *Bull. U. S. Geol. Surv. Territories*, ser. 2, no. 1, pp. 1–5.

The new sp. *Amia scutata*, *A. dictyocephala*, *Amyzon pandatum*, an *A. fusiforme* are described.

Cope, Prof. E. D. Vertebrate Palæontology of the Santa Fé Marls. (Ann. Rep. of Surveys, &c.) See **Wheeler**, p. 132.

The Ungulates already noticed (*Proc. Ac. Nat. Sci. Philadel.*). A plate of skull of *Procamelus occidentalis* is given. *Testudo undata*, n. sp. (Testudinata), and *Testudo klettiana*, n. sp., are described. Pls. v. & vi. show the skull of *Bathmodon elephantopus*. L. C. M.

Coues, Elliott. On the Cranial and Dental Characters of Mephitinæ, with description of *Mephitis frontata*, n. sp. foss. *Bull. U. S. Geol. Surv. Territories*, ser. 2, no. 1, pp. 7–15; woodcut.

From the bone-caves of Pennsylvania.

Dana, Prof. J. D. On Dr. Koch's Evidence with regard to the Contemporaneity of Man and the Mastodon in Missouri. *Amer. Journ.* ser. 3, vol. ix. pp. 335–346. Reprinted in *Pop. Sci. Rev.* vol. xiv. pp. 278–290 (with additional note at p. 290).

Examines the statements made by Dr. Koch in pamphlets dated 1841, 1843, 1845, and 1853. Shows that they are open to doubt, that the author criticised was deficient in the requisite geological and zoological knowledge. Concludes that although the contemporaneity of man and mastodon is clearly proved, in America the point is doubtful. Even if Dr. Koch's facts be correct (and it is probable that they are not), the inference as to contemporaneity drawn from them may be wrong. G. A. L.

——. Supplement to the article on Dr. Koch's evidence with regard to the contemporaneity of Man and the Mastodon. *Amer. Journ.* ser. 3, vol. ix. p. 398.

Calls attention to some more errors of Dr. Koch's.

Dawkins, Prof. W. B. The Mammalia found at Windy Knoll. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 246–255. [See **Pennington**, p. 33.]

Remains of bison, reindeer, grisly bear, and wolf are described. Fox, hare, rabbit, and water-vole occur with them.

Delafontaine, —. Les Vertébrés Fossiles des Mauvaises Terres du Nebraska, &c. *Arch. Sci. Phys. Nat.* t. lii. pp. 218–224; also t. liii. pp. 169–176.

A general account of the Vertebrata which have been obtained from the "Mauvaises Terres" of Nebraska. The first part contains an Introduction, and a section upon the ancient lacustrine basins of the region of the Rocky Mountains. The second part contains descriptions of the Vertebrata under the following headings—Mammals, Quadrumana, Herbivora, Horse, Birds. E. T. N.

Delfortrie, —. Un Dauphin d'une Nouvelle Espèce dans les Faluns du Sud-Ouest. *Act. Soc. Linn. Bordeaux*, t. xxx. 1 pl., from abstract in *Journ. Zool.* vol. iv. p. 361.

A new dolphin from U. Miocene, near Bordeaux (*Delphinus tetragorhinus*).

Dewalque, Prof. G. [New species of *Scaphaspis* and *Pteraspis* from the Taunusian of Ardenne.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* p. xliv.
Note of discovery. Species not determined.

Didelot, Léon. Note sur un *Pycnodus* nouveau du Néocomien moyen (*Pycnodus heterodon*). [New *Pycnodus* from the Middle Neocomian.] *Bull. Soc. Géol. France,* 3 sér. t. iii. pp. 237–256, one plate and 6 figs.
A jaw found in the neighbourhood of Aix-les-Bains. *P. Couloni* is the nearest allied Neocomian form. The most marked character of *P. heterodon* is the arrangement of the vomerine teeth, which, consisting at first of a single row of large ellipsoidal teeth, suddenly give place, after the sixth in the row, to two pairs of cylindrical teeth.
G. A. L.

Dumbleton, H. A supplementary note on the Bones discovered in making the section of the Island of Llangorse. *Trans. Woolhope Field Club,* 1871, p. 44 (published 1875 ?).

Duncan, Prof. P. M. Animals of the last Geological Epoch. *Coll. Guard.* vol. xxix. p. 415.
Report of lecture at Leeds, March 11, 1875.

Egozcue y Cia, Justo. Carta al Yllmo Svr Don Felipe Narango y Garza. *An. Soc. Españ. Hist. Nat.* vol. iv. pt. 1.
Describes fossil teeth from near Santander, referred to *Rhinoceros tichorinus.*

Etheridge, R., Jun. On some Undescribed Carboniferous Fossils. *Geol. Mag.* dec. ii. vol. ii. pp. 241–245, pl. viii.
Describes and figures two new teeth of fishes, *Petalorhynchus? Benniei* and *Petalodus? lobatus,* from the L. Carboniferous of W. Scotland (see also *post,* under INVERTEBRATA).
H. A. N.

Flower, Prof. William Henry. On the Bones of a Whale found at Pentuan, now in the museum of the Royal Geological Society of Cornwall. *Trans. R. Geol. Soc. Cornwall,* vol. iv. part 1, pp. 114–121.
Reference is made to the description of the Pentuan Stream-works by Mr. Colenso, from which it appears that the bones of the whale were found in a bed of sea-sand overlying silt containing remains of boar, deer, and oxen, and human skulls; lower down were the traces of an old forest, and finally the tin-ground resting on killas. The peculiar form of the jaw and the proportions of the other bones are different from those of any species of whale described, with one exception, that of a skeleton found in the Swedish island of Gräsö. The dimensions of the bones agree so nearly with those of the Swedish specimen that no doubt the Pentuan whale belongs to the same species, *Eschrichtius robustus.*
C. L. N. F.

Forsyth-Major, C. J. Considerazioni sulla Fauna dei Mammiferi pliocenici e post-pliocenici della Toscana. [Pliocene and Post-pliocene Mammals of Tuscany.] *Atti Soc. Tosc. Sci. Nat. Pisa,* vol. i. fasc. 1, pp. 7–40.

Fauna of the upper part of the Val d'Arno. Some new species mentioned.

Fricke, Dr. Karl. Die fossilen Fische aus den oberen Juraschichten von Hannover. [Fossil Fishes from U. Oolite of Hanover.] *Paleontographica,* Bd. xxii. Lief. 6, pp. 353–398, pls. 18–22.

Of Pycnodonts, 8 species are described, all of which occur in the *Pteroceras*-beds (Kimmeridge group) and some in the Coralline Oolite below: 2 new sp. (*Mesodon Wittei* and *M. pusillus*) are based on the dental apparatus, a large number of upper and lower jaws being examined in most cases. Of Euganoidei 3 sp. of *Lepidotus* occur, *L. affinis* being new. Of Selachians, 4 spines of *Astracanthus* are noted, *A. tetrastichodon* being new. Of *Hybodus* teeth, *H. crassus* is a new sp.; two others are mentioned, one being *H. raricostatus* (Ag.), originally described from the English Rhætic; it is here cited from the Coralline Oolite. E. B. T.

Gaudry, A. Sur la découverte de Batraciens dans le terrain primaire. [Discovery of Batrachia in Palæozoic Strata.] *Bull. Soc. Géol. France,* t. iii. pp. 299–306, pls. vii. & viii.; also *Compt. Rend.* t. lxxx. pp. 441–443, and *Journ. Zool.* vol. iv. pp. 38–41, 342.

Found in the bituminous shales of Muse (Saône-et-Loire) and Millery, near Autun. The geological age of these deposits is uncertain, some regarding them as Carboniferous, others as Permian. The specimens attain a length of 1·3 in. The head is frog-like, but not sufficiently preserved for detailed description. Teeth numerous, pointed, minute. The basisphenoid and pterygoid resemble those of Batrachia; the vomers those of Salamanders. Vertebral column almost completely ossified; about 30 centra can be distinguished. No trace of thoracic plates or scutes. Limbs tetradactyle, resembling those of Labyrinthodonts. The author considers this new form as allied to *Raniceps* (*Pelion*) of Wyman and *Apateon* of Von Meyer, and as having affinities with the true Batrachia. The name of *Protriton petrolei* is proposed. L. C. M.

——. Sur quelque pièces de Mammifères Fossiles qui ont été trouvées dans les Phosphorites du Quercy. [Mammalian Remains from the Phosphorites of Quercy.] *Journ. Zool.* vol. iv. pp. 518–527, pl. xviii.; abstract in *Compt. Rend.* t. lxxxi. pp. 1113–1115.

A small edentate has been determined from phalanges, and named *Ancylotherium priscum.*

The other specimens noticed are:—A small humerus, possibly belonging to *Adapis Duvernoyi* (=*Palæolemur Betillei*). A specimen of *Tapirulus hyracinus,* showing new characters, which render it difficult to assign to it a definite place in the Pachydermata. Jaws of *Lophiomeryx Chalaniati.* Several molars of *Cadurcotherium.* An upper jaw of *Chalicotherium*, from which the writer proposes to found a new species to be named *Ch. modicum.* An upper molar and several premolars of *Lophiodon lautricense*, Noulet (= *L. rhinocerodes* of Rütimeyer). In these phosphatic deposits, therefore, U. and M. Eocene forms are found associated with some of L. Miocene facies. E. T. N. & G. A. L.

Gervais, Prof. P. Produit des fouilles poursuivies à Durfort (Gard), par M. P. Cazalis de Fondouce, pour le Muséum d'Histoire naturelle. [Results of Excavations at Durfort.] *Compt. Rend.* t. lxxxi. p. 430, and *Journ. Zool.* vol. iv. pp. 314–317.

Remains of the following animals have been found in this locality in a yellowish, somewhat gravelly marl filling up a basin-shaped hollow in the surface of Neocomian rocks:—Elephant, Rhinoceros, Hippopotamus, stags and oxen, and a species of *Canis*; a fish allied to the Barbel, and several land and freshwater shells. Plants of species scarcely, if at all, distinct from living ones were also found. The skeletons are nearly all complete. The Durfort Elephant is referable to the *Elephas meridionalis* of Paul Savi, characteristic of the Val d'Arno deposits, near Florence. G. A. L.

——. Remarques sur les Formes Cérébrales propres aux Thalassothériens. [Forms of the Brain in Thalassotheria.] *Journ. Zool.* vol. iii. pp. 570–583, pl. xix.

Under the above name are included the Seals, Sirenians, and families of the Whales. The author describes the portion of a skull of *Zeuglodon cetioides*, sent by Harlan to De Blainville, and, from a consideration of a cast of so much of the interior of the brain-cavity as is preserved, concludes that *Zeuglodon* resembles the Seals. E. T. N.

——. Du Renne à l'époque préhistorique. [The Reindeer in Prehistoric Times.] (Extrait du Dictionnaire encyclopédique des sciences médicales, article *Renne*, 3^{e} série, t. iii. p. 391.) *Journ. Zool.* vol. iv. pp. 390–398.

A general account of the Reindeer-remains found with those of Man in the Caves of Europe.

——. Nouvelle espèce de *Machairodus.* [New Species of *Machairodus.*] *Journ. Zool.* vol. iv. pp. 419, 420.

The *Machairodus* tooth from the Phosphatic deposits of Tarn-et-Garonne, which the author formerly thought to be like the corresponding tooth in *Drepanodus primævus*, Leidy, is now found, from the examination of better specimens from Caylus, to be a new species allied to *M. palmidens*, but having the upper canines much more elongated and compressed; it has therefore received the name of *M. perarmatus.* E. T. N.

——. Palæothérium du Calcaire Grossier. *Journ. Zool.* vol. iv. pp. 421, 422.

Teeth and bones of a small *Palæotherium* found in a slab of calcaire grossier from Dampleux. About the size of *Palæotherium minus*, and named *P. eocænum.* E. T. N.

Gervais, Prof. P. [Note upon the Memoir by Robert Lawley on a '*Sphærodus* from Tuscany.'] *Journ. Zool.* vol. iv. pp. 516, 517. [See p. 284.]

Teeth like those which Agassiz named *Sphærodus* have been found upon the same jaw with the teeth of *Lepidotus*. The author has shown that the Tertiary form referred to *Sphærodus* really belongs to *Chrysophrys*. The affinities of Mr. Lawley's specimens are considered; but the propriety of uniting them with *Sphærodus* (*Chrysophrys*) *cinctus* is questioned, and it is proposed provisionally to give them the name of *Chrysophrys Lawleyi.* E. T. N.

Goldenberg, Dr. Friedrich. [Fauna of the Carboniferous Formation of Saarbrück.]

Deals chiefly with Invertebrata (see *post*). 4 species of *Amblypterus* are recorded; a new Labyrinthodont, *Anthracosaurus raniceps*, is described. Some enigmatical bodies are doubtfully referred to the coprolites of fishes, under the name of *Ichthyocopros pupæformis*; and some teeth are described as *Lamna carbonaria*, Germar, var. *minor*. H. A. N.

Gunn, John. Notes respecting the Mammalian Remains in the Norwich Museum, chiefly from the Forest Bed. *Norwich Mercury* (*Norw. Geol. Soc.*), Feb. 6; part 2, March 13.

——. Continuation of an Account of Fossil Remains in the Norwich Museum [with] especial reference to those found in the stony bed on the inclined plane of the Chalk. *Norwich Mercury* (*Norw. Geol. Soc.*), April 10.

On the ancient weathered surface of the Chalk the Proboscidea commonly assigned to the Norwich or Mammaliferous Crag are supposed to have lived. A record is here presented of what is said to have been an entire skeleton of *Mastodon arvernensis* from Horstead. L. C. M.

Günther, Dr. A. Description of the Living and Extinct Races of Gigantic Land-Tortoises. Pts. 1, 2. *Phil. Trans.* vol. clxv. pt. 1, pp. 251–284, pls. 33–45.

The gigantic tortoises of the Indian Ocean have a convex cranium, trenchant beak, and a narrow bridge between the obturator foramina. Mauritius and Rodriguez were formerly inhabited by several species of gigantic tortoises with flat cranium, truncated beak, and a broad bridge between the obturator foramina. Tortoises of the latter type survive in the Galapagos Islands; and though greatly reduced in number, five species can be identified: — *Testudo elephantopus*, Harlan; *T. nigrita*, Duméril and Bibron; *T. ephippium*, n. sp.; *T. microphyes*, n. sp.: *T. vicina*, n. sp. These are described and figured. L. C. M.

Haberlandt, G. Ueber eine fossile Landschildkröte des Wiener

Beckens. [Fossil Tortoise from the Vienna Basin.] *Verh. k.-k. geol. Reichs.* pp. 288, 289.

Preliminary notice of *Testudo præceps*, which will be described in the Jahrbuch; it comes from the Miocene near Vienna.

Hawkins, B. W. Pelvis of *Hadrosaurus*. *Proc. Ac. Nat. Sci. Philadel.* pt. ii. p. 329.

Hochstetter, Dr. Ferd. von. Ueber Reste von *Ursus spelæus* aus der Igritzer Höhle im Biharer Comitat, Ungarn. [*U. spelæus* in the Igritz Cavern, Hungary.] *Verh. k.-k. geol. Reichs.* pp. 113–119.

The cavern consists of chambers and narrow connecting passages; the bones are imbedded in a fine yellow loam to a depth of 12 feet, but are not found below that, or beyond the entrance of certain side passages by which they seem to have been introduced. All have not yet been determined; but the Cave-bear, Cave-hyæna, and Wolf occur. Measurements of the bear's skull compared with those of other localities are added. No remains of man or his works. E. B. T.

——. *Cervus megaceros* von Nussdorf. *Verh. k.-k. geol. Reichs.* p. 146.

Notices that the horns had been cut off the skull.

Hoernes, Dr. R. Vorlage von Wirbelthierresten aus den Kohlenablagerungen von Trifail in Steiermark. [Vertebrate Remains from the Coal-beds of Trifail, &c.] *Verh. k.-k. geol. Reichs.* pp. 310–313.

Preliminary notice of remains which will be described in the Jahrbuch, viz. mandible of *Anthracotherium magnum*, &c.; they come from Aquitanian beds a little older than those of Eibiswald, which yield a different vertebrate fauna. E. B. T.

——. Vorlage von Wirbelthierresten aus der Bohni-Höhle bei Anina. *Verh. k.-k. geol. Reichs.* pp. 339–342.

On the occurrence of the skull of the *Capra ibex* in the Bohni Cave with that of the Cave-bear; measurements of a fine example of the latter are given. E. B. T.

Houzeau de Lehaye, A. [On Pterodactylian Teeth in the Hainault Chalk and Mosasaurian Teeth in the Brown Chalk of Ciply.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin*, p. xliv.

Note of occurrence.

Huxley, Prof. T. H. On *Stagonolepis Robertsoni*, and on the Evolution of the Crocodilia. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 423–438, pl. xix.

Further remains of *Stagonolepis* are enumerated, and the skeleton is described systematically. The mandible with long curved teeth (*Quart. Journ. Geol. Soc.* vol. xv. p. 440) proves not to belong to *Stagonolepis*.

The Crocodilia are divided into sub-orders:—I. Parasuchia: no bony plates of the pterygoid or palatine bones to prolong the nasal passages; centra of the vertebræ amphicœlian. Genera: *Stagonolepis, Belodon.*

II. MESOSUCHIA: bony plates of the palatine bones prolonging the nasal passages, and giving rise to secondary posterior nares; vertebral centra amphicœlian. Genera: *Steneosaurus, Pelagosaurus, Teleosaurus, Teleidosaurus, Metriorhynchus, Goniopholis, Macrorhynchus, Pholidosaurus, Hyposaurus.* III. EUSUCHIA: both pterygoid and palatine bones giving off plates which prolong the nasal passages; vertebral centra mostly procœlous. Genera: *Thoracosaurus, Holops,* and recent forms. The Parasuchia are the least modified group, the Eusuchia the "most Crocodilian of Crocodiles," and the Mesosuchia, while more nearly connected with the latter than the former group, are intermediate. The geological evidence establishes the appearance of these reptiles in the order of their departure from the Lacertilian and their approach to the Crocodilian type. The Parasuchia are Triassic, the Mesosuchia post-Triassic but pre-Cretaceous, the Eusuchia post-Cretaceous.

A fragment of a crocodilian skull from the Wealden of the Isle of Wight is described and figured. It approaches the Eusuchia more than any other Mesosuchian. The imperfection of the skull and the absence of teeth prevent comparison with other Wealden Crocodiles.

The Lacertilia and Ornithoscelida are examined to see whether these types exhibit any evidence of a similar evolution to that of the Crocodilia. The vertebral column of Lacertilia has undergone a change corresponding to that which has occurred in the Crocodilia. All Lacertilians prior to those of the Purbecks have amphicœlous centra, while most existing lizards are procœlous. This change seems to have occurred earlier in the Lacertilia than in the Crocodiles, as a sacral vertebra of a lizard from the Purbecks has the centrum concave in front and convex behind. With regard to the Ornithoscelida, some confirmations and corrections of previous statements are noted. The ilium of the Thecodontosauria had been turned the wrong way. Instead of being more Ornithoscelidan than *Megalosaurus*, it is really more Lacertilian. The Triassic Ornithoscelida are less ornithic and more lacertilian than those belonging to the second half of the Mesozoic period. The oldest Crocodiles differ less than the recent ones from the Lacertilia; and as the oldest Ornithoscelida also approach the Lacertilia, the two groups seem to converge towards the common form of a Lizard with crocodilian vertebræ. *Cetiosaurus* also has a vertebral system like that of the Thecodontosauria and Crocodilia, but more Lacertian limbs; *Stenopelyx* may be in the same case. It may therefore be convenient to separate the Thecodontosauria, *Cetiosaurus,* and perhaps *Stenopelyx,* as a group "Sauroscelida," distinct from both Ornithoscelida and Crocodilia.

L. C. M.

Kapff, Dr. Ueber einen neuen Fund von Saurierresten im Stubensandstein. [New Discovery of Saurian Remains, &c.] *Verh. k.-k. geol. Reichs.* pp. 303, 304.

In the same Keuper quarry where *Teratosaurus suevicus* was found, further excavations have produced several skeletons of Lizards; it is suggested that these may be the young of *Zanclodon*, which perhaps is identical with *Teratosaurus*. E. B. T.

Klippart, John H. Discovery of *Dicotyles* (*Platygonus*) *compressus*, Le Conte. *Cincinn. Quart. Journ. Sci.* vol. ii. pp. 1–6.

Describes the discovery of the bones of a dozen individuals of *Dicotyles compressus* in post-glacial sands, within the limits of the city of Columbus, Ohio. H. A. N.

Krefft, G. Remarks on the Working of the Molar Teeth of the Diprotodons. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 317, 318.

Accompanied by a woodcut of a premolar and 4 molars of *Diprotodon minor*, Huxley. Criticises one of Prof. Owen's figures of the lower molars of *Diprotodon* as being in a too unabraded state; for when the last tooth breaks through the gum in this genus, the first of the series is always worn flat. Also states that in the *Phalangistidæ* the female is often larger than the male, whereas amongst the Kangaroos it is exactly the reverse. R. E., Jun.

——. Remarks on Prof. Owen's Arrangement of the Fossil Kangaroos. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 204–209. See also *Sydney Mail*, Dec. 26, 1874.

Considers that the whole of the Australian extinct and living Marsupials are offshoots of an extinct animal comprising the dental structure of both the carnivorous and herbivorous sections of the sub-order, and of which *Thylacoleo* was the last representative. All the marsupials can be received in one of two groups:—1. Those with a pair of small conjoined inner toes; 2. Those without the conjoined inner toes. If the fossil species must be divided into several genera, the author thinks that the arrangement proposed in his "Australian Vertebrata, Fossil and Recent" cannot well be discarded. R. E., Jun.

Lawley, Robert. Dei Resti di Pesci fossili del Plioceno Toscano.] [Pliocene Fossil Fishes of Tuscany.] *Atti Soc. Tosc. Nat. Sci. Pisa*, t. i. fasc. 1, pp. 59–66.

——. Observations sur une Mâchoire fossile provenant du genre *Sphærodus*, trouvée en Toscane dans le Pliocène de Volterrano. [Fossil Mandible of *Sphærodus* from Pliocene of Volterrano.] *Journ. Zool.* vol. iv. pp. 511–515, pl. xvii.; and *Atti Soc. Tosc. Nat. Sci. Pisa*, t. ii. fasc. 1, pl. 1.

The almost complete upper and lower jaws of *Sphærodus cinctus*, obtained from this locality, show that the anterior teeth of both jaws are conical and pointed, while the posterior ones are hemispherical.
E. T. N.

Leidy, Prof. Remarks on a Coal Fossil, etc. *Proc. Ac. Nat. Sci. Philadel.* pt. i. p. 120; woodcut.

An impression in coal-shale, which "might be that of the tail of a relative of the Ceratodus, or of a huge tadpole."

Leidy, Prof. Remarks on Elephant Remains. *Proc. Ac. Nat. Sci. Philadel.* p. 121.

Specimens supposed to be *E. americanus.*

——. Remarks on the occurrence of an Extinct Hog in America. *Proc. Ac. Nat. Sci. Philadel.* p. 207.

Regards a fragment of the lower jaw from the Pliocene sands of Niobrara River, Nebraska, as belonging to the recent pig, and not a true fossil. He believes that the specimens of pig which had been hitherto described as American fossils would be found to be recent.
E. T. N.

——. Remarks on Extinct Mammals from California. *Proc. Ac. Nat. Sci. Philadel.* pp. 259, 260.

Fossils from a Quaternary deposit of California. They are:—a lower jaw of *Canis indianensis*; portion of a maxilla of a large tiger, for which the name of *Tigris imperialis* is proposed; molar teeth of *Bos latifrons*; upper and lower molars of a large llama (*Auchenia hesterna*), which it was thought might be the same as Owen's *Palauchenia magna.*
E. T. N.

Lortet, Dr., and E. Chantre. Études Paléontologiques dans le Bassin du Rhône: Période Quaternaire. Suite. *Arch. Mus. Lyon,* t. i. livr. iv. pp. 97–130; plate.

The concluding portion of the memoir, giving lists of the genera and species of mammals found in numerous caves, &c., some of which are said to be intermediate in age between the Tertiary and Quaternary periods. Section 4 is a résumé of the fauna and climatology of the Quaternary epoch. E. T. N.

Marc, L'Abbé. Note sur une dent d'*Elephas primigenius* échouée dans les bancs de sable de la Manche au N.O. de Graye (Calvados). [Tooth of Mammoth from Sand-bank near Graye.] *Bull. Soc. Linn.* ser. 2, t. viii. pp. 135–137.

Marsh, O. C. New Order of Eocene Mammals. *Amer. Journ.* vol. ix. p. 221.

Tillotherium is the type of a new order *Tillodontia,* which combines characters of Carnivora, Ungulata, and Rodentia. Two families are included—*Tillotheridæ*, with large incisors growing from persistent pulps and rooted molars, and *Stylinodontidæ*, in which all the teeth are rootless. [See also *Amer. Journ.* vol. xi. p. 249, 1876.] L. C. M.

——. Notice of New Tertiary Mammals.—IV. *Amer. Journ.* vol. ix. pp. 239-250.

The remains described include the following new species of American Tertiary Primates:—*Lemuravus* (n. gen.) *distans*, L. Eocene, and *Laopithecus* (n. gen.) *robustus*, Miocene; a new Tillodont, *Tillotherium fodiens*, Eocene; horned Rhinoceroses, the first found in America, *Diceratium* (n. gen.) *armatum*, Miocene, *D. nanum*, Miocene, and *D. advenum*, U. Eocene?; a Brontotherian, *Anisacodon montanus*, Miocene.

Diplacodon (n. gen.) *elatus*, U. Eocene, connects *Limnohyus* with *Brontotheridæ*, differing from the latter in dentition and the absence of horns. *Orohippus Uintensis*, U. Eocene, is indicated by teeth. *Mesohippus* (n. gen.), Miocene, includes *M. Bairdi*, Leidy, and *M. celer*, Marsh, and connects *Orohippus* with *Anchitherium*. *Thinohyus* (n. gen.) *lentus*, and *T. socialis* are new Peccaries from the Miocene of Oregon. *Eporeodon*, n. gen., is proposed, with *E. occidentalis*, Marsh, as type. *Agriochœrus pumilus* is a Miocene Artiodactyle. L. C. M.

Marsh, O. C. On the Odontornithes, or Birds with Teeth. *Amer. Journ.* vol. x. pp. 1–7, pls. ix., x.; *Amer. Nat.* vol. ix. pp. 625–631, pls. ii., iii.; *Journ. Zool.* t. iv. pp. 494–502, pl. xv. Reprinted in *Geol. Mag.* dec. ii. vol. iii. pp. 49–53, pl. 2 (1876).

Ichthyornis dispar, Marsh, *Apatornis celer*, Marsh, and *Hesperornis regalis*, Marsh, have been previously described from the U. Cretaceous of America. They are here compared and placed in two new orders:—1. ICHTHYORNITHES. Teeth in sockets. Vertebræ biconcave. Sternum with keel. Wings well developed. *Ichthyornis*, *Apatornis*. 2. ODONTOLCÆ. Teeth in grooves. Vertebræ as in recent birds. Sternum without keel. Wings rudimentary. *Hesperornis*. L. C. M.

Martyn, Dr. S. On Fish Remains in the Bristol Old Red Sandstone. *Proc. Bristol Nat. Soc.* n. ser. vol. i. part ii. pp. 141–144.

Records the discovery of Ichthyolites in the U. Old Red Sandstone. The remains comprise one tooth or spine, and plates of bone either belonging to the head covering or to scales of fishes. H. B. W.

Merian, Prof. P. Ueber einen angeblichen Embryo von *Ichthyosaurus*. [A Reputed Embryo of *Ichthyosaurus*.] *Verh. nat. Ges. Basel*, Th. vi. pp. 343, 344.

In former cases the head of the small one has been turned towards the tail of the larger one; in the present case, from the U. Lias of Wurtemberg, the included one lies with its head towards the head of the larger Ichthyosaurus. Hence probably not an embryo, but a smaller animal that has been swallowed. E. B. T.

Miall, L. C. [Second] Report on the Structure and Classification of the Labyrinthodonts. *Rep. Brit. Assoc.* pp. 149–192, pls. iv.-vii.

The characters of the order are given. A new classification into the following sub-orders is proposed:—1. EUGLYPTA (*Mastodonsaurus*, *Labyrinthodon*, &c.). 2. BRACHIOPINA (*Brachyops*, &c.) 3. CHAULIODONTA (*Loxomma*, &c.). 4. ATHROÖDONTA (*Batrachiderpeton*, *Pteroplax*). 5. Uncharacterized. 6. ARCHEGOSAURIA. 7. HELEOTHREPTA (*Lepterpeton*). 8. NECTRIDEA (*Urocordylus*, *Keraterpeton*). 9. AÏSTOPODA (*Ophiderpeton*, *Dolichosoma*). 10. MICROSAURIA, Dawson. Under these heads are given the structure, measurements, locality, and bibliography of the well-investigated species. The remainder are arranged alphabetically in an appendix. An analysis of generic characters is given, and tables of distribution. The plates are restorations of skulls of the principal genera. L. C. M.

Miall, L. C. On the Structure of the Skull of *Rhizodus*. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 624–627; woodcut.

The upper surface and mandible are visible. A table of Dipnous and Crossopterygian Ganoids is given to show the affinities of *Rhizodus*.

——. [Ctenodus.] *Ann. Nat. Hist.* ser. 4, vol. xv. p. 436.

Refers to Hancock and Atthey's statement that the upper surface of the palatal tooth of *Ctenodus* is concave.

Milne-Edwards, Alph. Observations sur les Oiseaux fossiles des Faluns de Saucats et de la Molasse de Leognan. [Fossil Birds from Miocene of S.W. France.] *Ann. Sci. Géol.* t. vi. pp. 12, and 2 pls.

From the Garonne basin, besides the *Pelagornis miocænus*, Delf., allied to the albatross, are now added further evidences of pelagic birds. *Pelagornis Delfortii* is described from a tarso-metatarsal and humerus; a second humerus is named *Procellaria aquitanica*; a smaller one, of the size of the Cape petrel, is now named *P. antiqua*. Another humerus is named *Sula pygmæa*. E. B. T.

——, Observations sur l'époque de la disparition de la faune ancienne de l'île Rodrigues. [The Time of the Disappearance of the ancient Fauna of the Island of Rodriguez.] *Compt. Rend.* t. lxxx. pp. 1212–1216.

Historical notes chiefly.

Mivart, Prof. St. George. The Natural History of the Kangaroo. *Pop. Sci. Rev.* vol. xiv. p. 372.

Discusses the zoological characters of the kangaroo and its allies; on pp. 392–394 there are notes on its geological relations.

Nehring, A. Fossile Lemminge und Arvicolen aus dem Diluviallehm von Thiede bei Wolfenbüttel. [Fossil Lemming and Arvicolæ from Drift Loam at Thiede.] *Zeitsch. gesammt. Nat.* Bd. xi. pp. 1–28, plate.

Newberry, Prof. J. S. Descriptions of Fossil Fishes. Report of the Geological Survey of Ohio. Vol. ii. part 2, Palæontology, pp. 1–64, pls. liv.–lix.; 2 folding charts. [For the rest of the vol. see p. 274, and *post*, under INVERTEBRATA.]

The first part is occupied with Devonian Fishes. The genus *Dinichthys* is fully described from new material, and the new genera *Asterosteus*, *Acanthaspis*, and *Acantholepis* are defined. The new species described are *Dinichthys Terelli*, *Coccosteus occidentalis*, *Asterosteus stenocephalus*, *Acanthaspis armatus*, and *Acantholepis pustulosus*. The second part treats of Carboniferous fish-remains. A full account is given of the "Conodonts" of the Cleveland shale, several forms being figured; and the author propounds and defends the theory that these bodies are really the teeth of Cyclostomatous fishes. The following new species are described:—*Cladodus Hertzeri*, *C. Pattersoni*, *C. subulatus*, *C. concinnus*, *C. parvulus*, *C. Romingeri*, *Polyrhizodus modestus*,

Orodus variabilis, *Ctenacanthus furcicarinatus*, *C. parvulus*, *Listracanthus Hildrethi*, *Orthacanthus gracilis*, *Platyodus lineatus*, *Ctenodus serratus*, *C. reticulatus*, *Dipterus Sherwoodi*, and *Heliodus Lesleyi*. The new genus *Platyodus* is founded for the reception of an Elasmobranch allied to *Deltodus*, and the genus *Heliodus* for a Ganoid related to *Dipterus*.
H. A. N.

Owen, Prof. Richard. On Fossil Evidences of a Sirenian Mammal (*Eotherium ægyptiacum*, Owen) from the Nummulitic Eocene of the Mokattam Cliffs, near Cairo. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 100–105, pl. iii.

A cast of the brain with parts of the occipital and sphenoidal regions of the skull. The new Sirenian is regarded as nearly allied to *Felsinotherium*, *Halitherium*, and *Metaxitherium*. The brain, as compared with *Manatus*, is deficient in breadth and depth. L. C. M.

——. Monograph on the British Fossil Reptilia of the Mesozoic formations.—Part II. Pp. 15–93, plates iii. xxii. *Pal. Soc.*

1. On *Bothriospondylus*: this genus is founded upon vertebræ characterized by "long, low, and deep cavity, overarched by that part of the side of the centrum supporting the neurapophyses," very greatly reducing the width at that spot; large unossified spaces or cancelli in centrum; articular ends of trunk-vertebræ feebly convex and concave respectively: the neural spine was anchylosed, but has been broken away in all cases. The species described are:—*B. suffossus*: a greatly depressed sacral vertebral centrum, a terminal centrum of sacral vertebra are figured and described, also 4 dorso-lumbar vertebræ in which parapophyses are absent and the centrum is only subcompressed. Kim. Clay, Swindon.—*B. robustus*: a centrum of dorso-lumbar vertebra from the Forest Marble of Bradford (Wilts) is described. It is suggested that the teeth *Cordiodon* of the author's 'Odontography' from the same locality may possibly belong to this species.—*B. elongatus*: an incomplete centrum over 8 inches long is referred to this genus, since it has the long and deep lateral cavity and large cancelli. Weald.—*B. magnus*: an anterior dorsal centrum of short form, the terminal facet 8 inches in vertical diameter: very large cancelli. Weald, Isle of Wight.

2. On *Cetiosaurus*: one vertebra is drawn natural size, and the long bones (illustrated by 10 woodcuts) of *C. longus*, from Gt. Oolite of Kirtlington. The length of the trunk and tail, exclusive of the head, is estimated at 31 to 36 feet.

3. On *Omosaurus*. In Kimmeridge Clay, Swindon, were found parts of the vertebral column, pelvis, femur, tibia, and almost all the bones of the left fore limb of *O. armatus*, Ow. The middle dorsal vertebra is feebly convexo-concave, the neurapophyses coalesced, the rib-head fitted into a cavity on the neural spine without a parapophysis; neural canal large; neural arch strengthened by several ridges. Last lumbar seems confluent with first sacral. 5 sacral in apposition, with pleurapophyses attached; in the same block were 8 hinder trunk-vertebræ dislocated, and 4 caudals also displaced. Anterior caudals united by a syndesmosal

rather than by a synovial joint: no hypapophyses to first or second caudal. "The caudal vertebræ differ less from each other in *Omosaurus* and *Cetiosaurus* than they do in either of these genera as compared with *Iguanodon*." An osseous spine 1 ft. 8 in. long, with a central canal, is the only dermal element found. The humerus, radius, metacarpals, ilium, ischium, pubis, femur, tibia, &c. are described. A critical essay on the affinities of Deinosauria ends this contribution. E. B. T.

Owen, Prof. R. On *Prorastomus sirenoides* (Ow.)—Part II. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 559–567; pls. xxviii., xxix.

Further particulars of a skull of Tertiary age from Jamaica, described in vol. xi. p. 541 (1855). The chief additions relate to the base of the cranium, the zygomatic arch, the mandible, and the atlas. The brain-case is elongate, and much contracted in front. As far as can be seen, the dental formula is:—$i. \frac{3.3}{3.3}$, $c. \frac{1.1}{1.1}$, $d.$ or $p. \frac{5.5}{5.5}$, $m. \frac{3.3}{3.3} = 48$. *Prorastomus* is minutely compared with other recent and fossil *Sirenia*.
L. C. M.

——. On *Dinornis* (Part 20): containing a Restoration of the Skeleton of *Cnemiornis calcitrans* (Owen), with remarks on its affinities in the Lamellirostral group. *Trans. Zool. Soc.* vol. ix. pp. 253-272; pls. 35-39.

Describes the skull, vertebræ, sternum, and limb-bones. *Cnemiornis* appears to have possessed closer affinities with the feebly-flying Goose of Australia (*Cereopsis*) than with the flightless Duck of Magellan's Straits (*Tachyeres brachypterus*, Latham). Confirms Dr. Hector's opinion of the former existence of a gigantic Anserine bird in N. Zealand.
R. E., Jun.

——. On the Fossil Mammals of Australia.—Part X. Family Macropodidæ; the Mandibular Dentition and Parts of the Skeleton of *Palorchestes*, with additional evidences of *Sthenurus*, *Macropus Titan*, and *Procoptodon*. *Proc. R. Soc.* vol. xxiii. no. 162, p. 451. (Abstract.)

Peach, Charles W. On the Fossil Fish of Cornwall. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pt. 1, pp. 31–33.

Written to show that the author's opinion about certain Cornish fossils was correct. Some organisms, which he called fish, were pronounced by M'Coy to be sponges of the genus *Steganodictyum*. They have since been examined by several palæontologists, and found to be Pteraspidian fishes. C. L. N. F.

Prétrement, C. A. Nouveaux documents sur quelques points de l'histoire du cheval depuis les temps paléontologiques jusqu'à nos jours. [New Facts in the History of the Horse.] *Paris.*

Reinhardt, J. Bidrag til Kundskab om Kjaempedovendyret *Lestodon* *armatus.* [Contribution to the Knowledge of *Lestodon.*] *Vid. Selsk. Skr.* 5 Række, natur. og math. Afd. 11, Bd. i.; 3 pls.

Describes a series of remains, in the Zoological Museum, Copenhagen, brought from the plain of the La Plata, near Buenos Ayres. Setting aside as invalid Prof. Kröyer's name of *Platygnathus platensis,* the author adopts *Lestodon armatus,* Gervais. Reasons are adduced for generic separation from *Mylodon* of Owen. H. M.

Rivière, E. Faune quaternaire des cavernes des Baoussé-Roussé, en Italie, dites *Grottes de Menton.* [Quaternary Fauna of the Mentone Caverns.] *Compt. Rend.* t. lxxxi. pp. 346–348.

A list of the mammals, reptiles, and birds found in the caves, from 1870 to 1875.

Roemer, Ferd. Ueber C. E. von Baer's *Bos Pallasii* aus dem Diluvium von Dantzig. [*Bos Pallasii* from the Dantzig Drift.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 2, pp. 430–441; plate. Note by **Prof. Rütimeyer,** see below.

Description of two horns in the Museum of the Nat. Hist. Soc. of Dantzig. One of these is the original specimen described by C. E. Von Baer as *Bos Pallasii*; the other is a similar specimen, also found in the Drift of Dantzig, but hitherto undescribed. Both exhibit cuts, artificially produced. The relation of these horns to those of *Bubalus* is pointed out; but the author suggests that until further remains should be found they should be referred to Von Baer's *Bos Pallasii.* F. W. R.

Rothe, Prof. Die Säugethiere Niederösterreichs, einschliesslich der fossilen Vorkomnisse. [Mammals of Lower Austria, including Fossil Forms.] *Vienna.*

Rütimeyer, Prof. L. Weitere Beiträge zur Beurtheilung der Pferde der Quaternær-Epoche. [Quaternary Equines.] *Abh. schweiz. pal. Ges.* vol. ii. pp. 34; 2 plates and 3 woodcuts.

The remains from Swiss Lake-dwellings belong to the ordinary species; but in Italy and Auvergne other forms, e. g. *E. Stenonis,* are recognized. Teeth of intermediate affinities are found in the cave at Thayingen, in which incised portraits of the horse on lignite, &c., have also been found. E. B. T.

——. Ueberreste von Bueffel aus quaternæren Ablagerungen von Europa. [Remains of Buffalo from European Quaternaries.] *Verh. nat. Ges. Basel,* Thl. vi. pp. 320–332; also *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 2, pp. 438–448. (Note to Prof. Roemer's paper.)

Part of a skull with a horn from alluvium near Dantzig shows that the Buffalo existed in Europe: the horn is short and straight, and nearest to the Asiatic Arnee. Three other occurrences of the genus are noted in Europe. E. B. T.

Rütimeyer, Prof. L. Spuren des Menschen aus interglacialen Ablagerungen in der Schweiz. [Traces of Man in Swiss Interglacial Deposits.] *Verh. nat. Ges. Basel*, Thl. vi. pp. 333–342, 4 woodcuts; and *Archiv für Anthrop.* viii. Heft 2, pp. 133–137; 3 woodcuts. [Title entered, p. 96.]

At Wetzikon the lignite is between two deposits of erratic material; in this interglacial coal, besides the formerly known extinct species (Elephant, Rhinoceros, Cave-bear, *Bos primigenius*, &c.), have now been found the works of man. Four rods of wood, artificially sharpened, and probably the remains of coarse wickerwork, were disinterred from the substance of the lignite layer. E. B. T.

——. Die Knochenhöhle von Thayingen bei Schaffhausen. [Bone-cave of Thayingen near Schaffhausen.] *Archiv für Anthrop.* viii. pp. 123–131; 8 woodcuts.

——. Ueber die Ausdehnung der pleistocenen oder quartären Saugethierfauna, speciell über die Fünde der Thainger Hohle. [Range of Pleistocene Mammals, and Discoveries in the Thayingen Cave.] *Verh. schweiz. nat. Ges.* pp. 143–152.

——. Die Veränderungen der Thierwelt in der Schweiz seit Anwesenheit des Menschen. [Changes of Fauna in Switzerland since the appearance of Man.] Pp. 99. 8vo. *Basle.*

Rutot, A. Note sur l'extension de *Lamna elegans*, Ag., à travers les terrains crétacé et tertiaire. [Range of *Lamna elegans* through the Cretaceous and Tertiary beds.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires*, pp. 34–41.

Notices all the horizons at which this species has been found, with the chief localities. It ranges from the Maestricht beds to the Upper Rupelian (Oligocene). G. A. L.

Sauvage, Dr. H. E. Sur la Faune Ichthyologique de la période tertiaire, et sur les Poissons fossiles d'Oran (Algérie) et de Licata (Sicile). [On Tertiary Fishes, and on the Fossil Fish of Oran (Algeria) and of Licata (Sicily).] *Bull. Soc. Géol. France*, 3 sér. t. ii. pp. 312–315.

An analysis of a work in *Ann. Sci. Géol.* t. iv.

——. Sur les caractères de la Faune erpétologique du Boulonnais à l'époque jurassique. [Characters of the Reptilian Fauna of the Boulonnais in Jurassic Times.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 81–85.

A list of the species of Chelonians, Pterosaurians, Crocodilians, Dinosaurians, Mosasaurians, Sauropterygians and Ichthyopterygians found in the Jurassic beds of the Boulonnais; and a sketch of their distribution in these rocks. G. A. L.

——. Essai sur la Faune ichthyologique de la Période liasique, suivi d'une notice sur les Poissons du Lias de Vassy. [The Fish of the Lias, &c.] *Ann. Sci. Géol.* t. vi. livr. 3, pp. 58.

Gives a list of fossil fishes from the Rhætics, and from the Lias, and then passes to points of classification, particularly treating of the Ganoids of the Jurassic epoch. E. B. T.

Seeley, Prof. H. G. On the Femur of *Cryptosaurus eumerus*, Seeley, a Dinosaur from the Oxford Clay of Great Gransden. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 149–151, pl. vi.

——. Note on *Pelobatochelys Blakii* and other Vertebrate Fossils exhibited by the Rev. J. F. Blake, in illustration of his paper on the Kimmeridge Clay. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 234–237, pl. xiii.

Fragments of a Chelonian carapace.

——. On the Maxillary Bone of a new Dinosaur (*Priodontognathus Phillipsii*), contained in the Woodwardian Museum of the University of Cambridge. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 439–443, pl. xx.

The maxilla is nearly complete, and shows a row of tooth-sockets. Several successional teeth, which closely resemble the teeth of *Scelidosaurus* and those attributed to *Acanthopholis*. Locality and formation uncertain. L. C. M.

——. On the Axis of a Dinosaur from the Wealden of Brook in the Isle of Wight, probably referable to the Iguanodon. *Quart. Journ. Geol Soc.* vol. xxxi. pp. 461–464; 2 woodcuts.

——. On an Ornithosaurian (*Doratorhynchus validus*) from the Purbeck Limestone of Langton, near Swanage. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 465–468; woodcut.

Pterodactylus macrurus of the author's 'Index to the Aves, Ornithosauria, and Reptilia.' The vertebra, originally considered caudal, may be cervical. L. C. M.

St. John, Orestes, and Worthen, A. H. Descriptions of Fossil Fishes. *Geological Survey of Illinois*, vol. vi. part ii. section i. pp. 245–488, pls. i–xxii.

Pp. 251–334 treat of the Devonian and Carboniferous Hybodonts of Illinois, only two species coming from the former group. The new genera described are *Phœbodus* (Devonian), *Bathycheilodus* (Devonian), *Lambdodus*, *Hybocladodus*, *Thrinacodus*, *Mesodmodus*, *Leiodus*, *Agassizodus*, *Periplectrodus*, and *Stemmatodus*. The new species described are:—*Phœbodus Sophiæ* (Devonian), *Bathycheilodus McIsaacsii* (Devonian), *Pristicladodus Springeri*, *Cladodus exilis*, *C. Springeri*, *C. exiguus*, *C. succinctus*, *C. Wachsmuthi*, *C. alternatus*, *C. intercostatus*, *C. gomphoides*, *C. bellifer*, *C. prœnuntius*, *C. raricostatus*, *C. eccentricus*, *C. Van Hornei*, *C. euglypheus*, *C. Fulleri*, *C. pandatus*, *C. carinatus*, *Lambdodus costatus*, *L. calceolus*, *L. transversus*, *L. hamulus*, *L. reflexus*, *Hybocladodus plicatilis*, *H. tenuicostatus*, *H. intermedius*, *H. nitidus*, *Thrinacodus nanus*, *Mesodmodus exsculptus*, *M. explanatus*, *M. ornatus*, *Orodus parallelus*, *O. Whitei*, *O. decussatus*, *O. dædaleus*, *O. major*, *O. raricostatus*, *O. fastigiatus*, *O. carinatus*, *O. neglectus*, *O. parvulus*, *O. turgidus*, *O. Alleni*, *Leiodus calcaratus*, *Agassizodus Virginianus*, *A. scitulus*, *Periplectrodus Warreni*, *P. compressus*, *P. expansus*, *Stemmatodus cheiriformis*, *S. bifurcatus*, *S. bicristatus*, *S. simplex*, *S. symmetricus*, *S. Keokuk*, and *S. compactus*.

The next part deals with the Carboniferous Petalodonts of Illinois, the following new species being described:—*Desmiodus* (n. gen.) *tumidus*, *D. costelliferus*, *D. ligoniformis*, *D.* (?) *flabellum*, *Venustodus* (n. gen.) *variabilis*, *V. robustus*, *V. tenuicristatus*, *V. Leidyi*, *V. argutus*, *Harpacodus occidentalis*, *H. compactus*, *Chomatodus comptus*, *C. parallellus*, *C. incrassatus*, *C. inconstans*, *Lisgodus* (n. gen.) *curtus*, *L. serratus*, *L. selluliformis*, *Tanaodus* (n. gen.) *sublunatus*, *T. pumilus*, *T. prœnuntius*, *T. sculptus*, *T. grossiplicatus*, *T. bellicinctus*, *T. depressus*, *T. polymorphus*, *Ctenoptychius pertenuis*, *C. Stevensoni*, *Polyrhizodus Williamsi*, *P. nanus*, *P. Piasaensis*, *P. amplus*, *P. carbonarius*, *Dactylodus concavus*, *D. minimus*, *D. excavatus*, *Antliodus perovalis*, *A. gracilis*, *Petalodus hybridus*, *P. proximus*, *Ctenopetalus vinosus*, *C. bellulus*, *C. limatulus*, *C. medius*, *C. occidentalis*, *Pristodus* (?) *acuminatus*, *Calopodus* (n. gen.) *apicalis*, *Petalorhynchus pseudosagittatus*, *P. distortus*, *P. spatulatus*, *Peltodus quadratus*, *P.* (?) *plicomphalus*, *P. transversus*, *Fissodus* (n. gen.) *bifidus*, *F. tricuspidatus*, and *Cholodus* (n. gen.) *inæqualis*.

The third part treats of the Cochliodonts, the only species described being a new Carboniferous form, *Psephodus* (?) *reticulatus*.

The last part deals with the Carboniferous Ichthydorulites of Illinois, the following new species being described:—*Ctenacanthus spectabilis*, *C. sculptus*, *C. varians*, *C. speciosus*, *C. gradocostus*, *C. Burlingtonensis*, *C. Keokuk*, *C. excavatus*, *C. gemmatus*, *C. pugiunculus*, *C. similis*, *Acondylacanthus* (n. gen.) *gracilis*, *A. æquicostatus*, *Asteroptychius* (?) *vetustus*, *A. Keokuk*, *A. St. Ludovici*, *A.* (?) *tenuis*, *A. bellulus*, *Geisacanthus* (n. gen.) *stellatus*, *G. bullatus*, *Anaclitacanthus* (n. gen.) *semicostatus*, *Bythiacanthus* (n. gen.) *Van Hornei*, *Glymmatacanthus* (n. gen.) *Irishii*, *Physonemus proclivus*, *P. depressus*, *P. carinatus*, *P. parvulus*, *P. Altonensis*, *P. Chesterensis*, *Drepanacanthus reversus*, *Xystracanthus mirabilis*, *X. acinaciformis*, *Erismacanthus McCoyanus*, *Batacanthus* (n. gen.) *baculiformis*, *Gampsacanthus* (n. gen.) *typus*, *G. squamosus*, *G.* (?) *latus*, *Lecracanthus* (n. gen.) *unguiculus*, *Oracanthus* (?) *obliquus*, *O. consimilis*, and *Pnigeacanthus* (n. gen.) *deltoides*.

H. A. N.

Sirodot, —. Le Mammouth à Mont-Dol (Ille-et-Vilaine). [The Mammoth of Mont-Dol.] *Compt. Rend.* t. lxxx. pp. 871, 872.

Announces the discovery of remains of at least 60 individuals of *Elephas primigenius*, and probably of *E. Indicus* also, in a Quaternary deposit. G. A. L.

Stoddart, W. W. Ceratodus Forsteri. *Proc. Bristol Nat. Soc.* n. ser. vol. i. pt. 2, pp. 145–149.

Strobel, P. Notizie preliminari su le Balenoptere fossili subappennine del Museo parmense. [Pliocene Fossil Whales.] *Boll. R Com. geol. Ital.* pp. 127–140.

A preliminary notice of three species of *Cetotherium*.

Traquair, Dr. R. H. On the Structure and Systematic Position of the Genus *Cheirolepis*. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 237–249, pl. xvii.

The close relationship of *Cheirolepis* and *Palæoniscus* is affirmed. The *Acanthodidæ* agree with *Cheirolepis* in little save the minute size of the scales. Powrie's "principal jugulars" are interclavicular plates. The fins, shoulder-girdle, skull and dentition are described and figured. L. C. M.

——. On the Structure of *Amphicentrum granulosum*, Huxley. *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 273–281, pl. ix.

The study of a series of specimens has enabled the author to give a description of the head and shoulder-girdle of the above genus, which differs materially from that given by Dr. Young in his paper "On the affinities of *Platysomus* and allied genera." A revised diagnosis of the genus *Amphicentrum* is given. E. T. N.

——. On the Structure and Affinities of *Tristichopterus alatus*, Egerton. *Trans. R. Soc. Edin.* vol. xxvii. pt. 3, pp. 383–396, pl. 32.

Gives a description of the new facts disclosed by further specimens. Considers that *Tristichopterus* has no affinity with *Dipterus*, nor any special relationship with *Cœlacanthus*, but that it should be placed in the Cycliferous division of the Glyptodipterini, in Prof. Huxley's classification of the Crossopterygian Ganoids. Gives a provisional modification of the arrangement of the latter. R. E., Jun.

Ubachs, Casimir. La *Chelonia Hoffmanni*, Gray, du tuffeau de Maestricht. [*C. Hoffmanni*, Gray, from the Maestricht Chalk.] *Ann. Soc. Géol. Belg.* t. ii., *Mémoires*, pp. 197–205; plate.

Describes the most perfect specimen of this species which has been found. The carapace is complete and in perfect preservation; it measures 1·45 metre in length. G. A. L.

Vacek, M. Ueber einen Unterkiefer von *Mastodon longirostris*, Kaup, aus dem Belvedere-Sande am Laaer-Berge bei Wien. [Lower Jaw of *Mastodon longirostris* from Belvedere Sands.] *Verh. k.-k. geol. Reichs.* pp. 296–298.

Preliminary notice of mandible of *M. longirostris*; the milk dentition fairly preserved.

Vaillant, Prof. Léon. Remarques sur les Lézards de l'Ambre, et description d'un Geckotien de la Resine Copale. [Lizards in Amber, and a Gecko in Gum-Copal.] *Ann. Sci. Géol.* t. vi. livr. 3, pp. 15; plate.

Shows that the presence of lizards in true amber is problematical. Describes the occurrence of a recent lizard, *Hemidactylus capensis*, in gum-copal (mistaken for amber), which gum he considers semifossil, of the Quaternary period, being the product of an extinct tree. E. B. T.

Vasseur, Gaston. Sur quelques Vertébrés du Gypse des environs de Paris. [Vertebrates of the Paris Gypsum.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 134-137, pl. ii.

In a gypsum quarry at Vitry-sur-Seine the writer has found, in addition to the nearly complete specimen of *Palæotherium* described by M. Paul Gervais in 1873, portions of the skeletons of *Anoplotherium commune*, *Palæotherium magnum*, *P. medium*, *P. crassum*, and *P. minus*, *Xiphodon gracile*, and *Dichobune leporinum*. At Romainville and at Rosny he has found several bones of *Hyænodon parisiense*, thus establishing the contested fact of that fossil's presence in the Paris gypsum-deposits. Remains of crocodiles, turtles, birds, and of *Xiphodon*, complete the list. G. A. L.

——. Sur le cubitus du *Coryphodon Oweni.* [Ulna of *Coryphodon Oweni.*] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 181-186, pl. iii.

Detailed description of a portion of an ulna of this species found in an ossiferous conglomerate overlying the pisolitic limestone, in some plastic clay works at the Moulineaux, near Meudon, where a femur belonging to the same species had already been found. G. A. L.

Vilanova y Piera, Juan. El *Protriton petrolei. Ann. Soc. Españ. Hist. Nat.* vol. iv. pt. 3. [See **Gaudry**, p. 279.]

Ward, John. On the Organic Remains of the Coal-measures of North Staffordshire, their Range and Distribution, with a Catalogue of the Fossils and their Mode of Occurrence. *N. Staff. Field Club Papers*, pp. 184-251; plate.

Gives a general description of the Coal-fields of N. Staffordshire, pp. 186-193; Plants, 194-201; Mollusca, 201-207; Annelida and Crustacea, 207-209; Pisces, 209-247; Reptilia, 247-249. The plate is of Fish-remains. W. W.

Wilder, Prof. B. G. On a fœtal Manatee and Cetacean, with remarks upon the affinities and ancestry of the Sirenia. *Amer. Journ.* ser. 3, vol. ix. pp. 105-114; plate.

Among the conclusions are the following:—The general aspect of the head and face of the manatee is ungulate rather than cetacean. To this extent the embryo of a lower form resembles the adult of a higher. This, while contrary to the usually accepted rule, may be really an exemplification of a more comprehensive law, namely, that the *young of animals resemble their ancestors.* This retrograde metamorphosis of the manatee points to a like retrograde evolution of the Sirenia from prior ungulate forms. This idea is confirmed by what is known of the geological succession of Sirenian forms. G. A. L

Wilson, [J. M.] Ichthyosaurus from New Bilton. *Rep. Rugby School Nat. Hist. Soc.* for 1874, p. 48.

Found accompanied by coprolites in the belt of clay and stone below the band of stone with Pentacrinites. (See Report for 1872.)

Wilson, J. M. Note on the Labyrinthodon. *Rep. Rugby School Nat. Hist. Soc.* for 1874, p. 52, pl. i.

The plate is from a specimen "from the Lower Irish Coal Measures."

Wonfor, T. W. On Wingless Birds. *22nd Ann. Rep. Brighton Nat. Hist. Soc.* p. 49.

Refers to the *Dinornis* of New Zealand, pp. 50, 51; and to the *Æpyornis* of Madagascar, p. 52.

Woodward, Henry. Birds with Teeth. *Pop. Sci. Rev.* vol. xiv. pp. 337–350; plates.

Gives an outline of the geological distribution of birds. Describes *Archæopteryx*, especially the jaw with teeth on the slab in the British Museum. Inclines to the opinion that the jaw belongs to *Archæopteryx*, and points out that no other similar jaw is known from the Solenhofen slates. The recent *Merganser serrator* and the fossil *Odontopteryx toliapicus* (London Clay, Sheppey) have tooth-like serrations to their mandibles; the fœtal parroquet has tubercles in a like position. *Ichthyornis dispar* (Cretaceous Shale, Kansas) has teeth in both jaws, implanted in distinct sockets. These facts, and others referred to, tend to bridge over the gap between birds and reptiles; their bearing upon the theory of evolution is discussed. W. T.

Young, John. On the Lower Portion of the Horn of Reindeer (*Cervus tarandus*), now extinct in the British Isles. *Proc. Nat. Hist. Soc. Glasg.* vol. ii. pt. i. p. 5.

Describes a specimen found in Boulder Clay at Rae's Gill, near Carluke, about the year 1849. J. E. T.

Zigno, Baron Achille de. Annotazioni paleontologiche. Sirenii fossili trovati nel Veneto. [Palæontological Notes on the Fossil *Sirenia* found in Venetia.] *Mem. R. Ist. Veneto*, vol. xviii.

See also:—

Blake, Rev. J. F. Kimmeridge Clay Fishes: p. 5.

Busk, Prof. G. Quaternary Mammals, Portland: under **Prestwich**, p. 34.

Cope, Prof. E. D. *Typothorax*: pp. 117, 132.

Geinitz, E. Lower Permian Fishes: p. 66.

Hantken, M. *Myliobatis superbus*: p. 310.

Houzeau de Lehaie, A. List of Ypresian Fish: p. 73.

Knight, C. Fossil Reptilian Fauna, N. Zealand: p. 155.

M'Coy, F. Fish, Victoria: p. 314.

Pengelly, W. *Machairodus latidens*: p. 33.

2. *INVERTEBRATA.*

Achiardi, A. D'. Coralli Eocénici del Friuli. *Atti Soc. Tosc. Sci. Nat. Pisa*, vol. i. fasc. 1, pp. 70–86; plates i., ii.

The following new species are described and figured:—*Trochocyathus Taramellii*, *Placosmilia elliptica*, *P. italica*, *P. strangulata*, *P. lata*, *Trochosmilia Pasiniana*, *T. cormonsensis*, *T.* (?) *Pironana*, *T.* (?) *elongata*, *Phyllosmilia calyculata*, *P. crassa*, *P. Pironæ*, *Cœlosmilia forojuliensis*, *Lophosmilia granulosa*, *Epismilia alpina*, *E.* (?) *dubiosa*. W. W.

Anon. [**C. A. W.**] Note on the genus *Opisthoptera*, Meek, 1872, and *Anomalodonta*, Miller, 1874. *Amer. Journn.* ser. 3, vol. ix. pp. 318–320.

Concludes by stating the synonymy of the genus thus:—OPISTHOPTERA, Meek. *Megaptera*, Meek and Worthen, 1866 (not *Megaptera*, Gray); *Opisthoptera*, Meek, 1872; *Anomalodonta*, Miller, 1874. G. A. L.

Austin, Fort-Major Thos. Observations on the Genus *Platycrinus*. *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 90, 91; 2 woodcuts.

It is proposed to separate the species hitherto included in the genus into 2 groups—*Platycrinus* being retained for those species having the mouth (?) at the end of a proboscis, while the species that have no proboscis, and in which the mouth (?) is placed interradially, are to be included in a new genus, *Medusacrinus*. E. T. N.

Baily, W. H. Figures of Characteristic British Fossils, with Descriptive Remarks. Vol. i. part iv. pp. li–lxxx, 93–126, plates 32–42. 8vo. *London.*

Embraces the Devonian, Old Red Sandstone, Carboniferous, and Permian. There are brief notes of the lithological characters, range, thickness, &c. of the beds. This part completes vol. i. The titlepage is dated 1875; but the previous parts were published in 1867, 1869, and 1871. W. T.

Barcena, Mariano. Descripcion de un Crustaceo fosil del genero *Sphæroma* (*S. Burkartii*) y reseña geologica del valle de Ameca de Jalisco. [Fossil *Sphæroma*.] 12mo. *Mexico.*

Barrois, Ch. Sur la Philogénie des Éponges. [The Phylogeny of Sponges.] *Ann. Soc. Géol. Nord*, 1874–1875, pp. 71–73.

Brief sketch of the subject.

Bayan. Sur quelques espèces fossiles rapportées à la famille des Trochidæ. [Supposed fossil Trochidæ.] *Compt. Rend. Assoc. Franç.* for 1874, p. 359, 360. (Abstract.)

Deals with Secondary species. Some so-called *Trochi* are *Littorinæ*, whilst some so-called *Solaria* are *Trochidæ*.

Bayan. Sur deux espèces peu connues de Brachiopodes. *Compt. Rend. Assoc. Franç.* p. 380.

A new species (undescribed) *Terebratula Ortliebi*, and *Terebratulina Woodi*, Davidson, from L. Tertiary, Tournay.

Becker, Dr. E. and **C. Milaschewitsch.** Die Korallen der Nattheimer Schichten. [Corals of Nattheim Beds.] *Paleontographica*, **Bd. xxi.** Lief. 6, 7, pp. 121–204, tab. 36–45.

The following new species are described :—*Enallohelia tubulosa, Pleurosmilia valida, Rhipidogyra costata, Stylosmilia suevica, Placophyllia rugosa, Stylina fallax, Cyathophora magnistellata, Calamophyllia disputabilis, Dimorphophyllia jurensis, D. collinaria, Latimæandra brevivallis, L. pulchella, Chorisastræa dubia, Isastræa crassiseptata, Thamnastræa gibbosa, T. patina, T. prominens, T. subagaricites, T. pseudarachnoïdes, T. robusto-septata, T. heterogenea, T. discrepans, T. seriata, T. major, T. speciosa, T. grandis, T. prolifera, Dimorphastræa concentrica, D. fallax, D. helianthus, D. affinis, Protoseris foliosa, P. robusta, P. suevica.* In part 2 :—*Parasmilia jurassica, Epismilia rugosa, E. Fromenteli, E. cylindrata, E. calycularis, E. reptilis, E. cuneata, Pleurosmilia crassa, Montlivaltia obconica, M. Nattheimensis, M. dianthus, M. cyathus, M. bullata, M. unicornis, M. pirum* ; and one new genus, *Plesiosmilia,* with the following new species, *P. turbinata, P. cylindrata, P. hemisphærica, P. excavata, P. sessilis, P. infundibuliformis.* E. B. T.

Bell, A. On a New Land-Shell from the Gault of Folkestone. *Geol Mag.* doc. 2, vol. ii. p. 240.

Notes the discovery of a *Helix* resembling *H. nemoralis,* and proposes to name it *H. Woodwardi.*

Bellardi, L. Monografia delle Nuculidi trovate finora nei terreni terziari del Piemonte e della Liguria. [*Nuculidæ* of the Tertiary Beds of Piedmont and Liguria.] Pp. 34, 1 plate. 4to. *Turin.*

Descriptions and full synonyms of the following genera are given, including 33 species :—*Nucula, Leda, Yoldia, Malletia, Neilo,* and *Tindaria.* A table of their distribution in time is appended. E. T. N.

Bittner, A. Die Brachyuren des vicentinischen Tertiärgebirges. [Brachyura of Vicentine Tertiaries.] *Denkschr. k. Ak. Wiss.* **Bd.** xxxiv. Abth. 2, p. 63.

Borre, A. P. de. Notes sur des empreintes d'insectes fossiles découvertes dans les schistes houillers des environs de Mons. [Impressions of Fossil Insects in the Coal Measure Shales of the Neighbourhood of Mons.] *Ann. Soc. Entom. Belg.* t. xviii. 10 pp., pls. v., vi. ; also *Compt. Rend. Soc. Entom. Belg.* Nos. 12 (3 pp.), 13 (pp. 7–11), 18 (p. 17). [This last note not in the *Annales.*]

In the first note two impressions found in shale at the Couchant of Mons are described ; both are apparently Orthopterous, the one being an hemelytron, showing the characters of the *Acrididæ* and a close relation to the genus *Pachytylus* : for this the name *Pachytylopsis Per-*

senairei is proposed. The other specimen is a lower wing referred to the same new genus as the last, with the name *P. Borinensis*, after the Borinage canton in which it was found. A doubtful impression of a termite's wing was also found. These three are figured in heliotype.

The second note is a correction of the first. Renewed examination of the second specimen (*P. Borinensis*) showed it to be rather Lepidopterous than Orthopterous; and the genus *Breyeria* is proposed for its reception, the specific name remaining unchanged. Plate vi. shows side by side an upper wing of *Attacus aurata* and that of the fossil.

The third note announces the discovery of more Coal Measure insect-remains, and of a Dipterous species in the ferruginous Oolite of Belvaux (Belgian Luxemburg). G. A. L.

Böttger, Dr. O. Die Eocænformation von Borneo und ihre Versteinerungen. [Fossils of the Borneo Eocene.] *Paleontographica*, Suppl. iii. Lief. i. pp. 9–59, pls. i.–x.

A table gives the distribution of fossils in the three divisions; some few are identified with species from European Eocene, more from that of India. The new species are:—*Turbo Borneensis, T. punicingulatus, Cerithium filocinctum, Natica (Ampullina) patulæformis, Terebra bifilifera, Conus gracilispira, Mitra æquiplicata, Rimella inæquicostata, Buccinum Rengaronense, Cypræa angygyra, C. paniculus, Teredo striolatus, Teredina annulata, Tellina biornata, T. rotundata, Sunetta sinuosa, Cardium deplanatum, C. eduliforme, C. subfragile, Cyrena (Batissa) Borneensis, C. (Corbicula) Rengaronensis, Corbis minor, Venus sulcifera, Lucina Borneensis, L. corbulæformis, Cardita arcæformis, C. (Venericardia) Borneensis, Arca lucinæformis, Cypricardia sulcosa, C. (Modiolaria) tenuis, Anatina annulifera, Psammosolen truncatus, Siliqua annulifera, Panopæa filifera, Avicula peregrina, Pecten rete, P. subarcuatus, Terebratula Rengaronensis.* E. B. T.

Brady, Henry B. On some Fossil Foraminifera from the West-Coast District, Sumatra. *Geol. Mag.* dec. ii. vol. ii. pp. 532–539, pls. xiii., xiv.

Several well-known species from Tertiary strata are described, together with a new form (*Orbitoides Sumatrensis*) and a new variety (*Nummulina Ramondi*, var. *Verbeekiana*). *Fusulina princeps*, Ehr., from Carboniferous strata, is also described. H. A. N.

Brodie, Rev. P. B. On the Correlation of Fossil Insects. *Proc. Warwick. Field Club*, 1874, pp. 16–38 (? published in 1875).

A reprint, with additions and corrections, of the paper noticed in the Geological Record for 1874, p. 289, under a different title.

Brögger, W. C. Fossiler fra Öxna og Kletten. *Geol. Fören. Stockholm Förhandl.* Band ii.; 1 plate.

Remarks on fossils, chiefly Trilobites, from the Cambrian rocks of the above localities, near Österdal in Norway. The plate includes figures tracing the growth of a Trilobite resembling *Liostracus*. H. M.

Brögger, W. C. Fossiler fra del Throndhjemske, samlede 1871 og 1873 af Th. Kjerulf, samt 1874 af Th. Kjerulf og student Friis. [Fossils from the Throndhjem Series.] *Nyt Mag. Nat. Christiania*, Bd. 2, Heft 1–2, pp. 95–107.

The following fossils are figured:—*Favosites*, sp.; *Streptelasma*, sp.; Crinoids; Bryozoa; *Spirifera plicatella*; *Meristella*, Hall. sp.?; *Atrypa reticularis*, L.; *Rhynchonella*, sp.; *Orthis*, sp; *Strophomena*, sp.; *Euomphalus*, sp.; *Murchisonia*, sp.; *Pleurotomaria*, sp.; *Bellerophon*, sp.; *Cyrtoceras*, sp.; *Orthoceratites*, sp.; *Lituites*, sp. E. E.

Carpenter, Dr. W. B. Further Researches on *Eozoön canadense*. *Rep. Brit. Assoc.* for 1874, *Sections*, pp. 136, 137.

Carter, Dr. H. J. Relation of the Canal-System to the Tubulation in the Foraminifera, with reference to Dr. Dawson's 'Dawn of Life.' *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 420–424.

A controversial article on the true relations of the canal-system and tubulation of the *Foraminifera*, with special reference to the claims of *Eozoön* to be regarded as a fossil. H. A. N.

Conrad, T. A. Descriptions of a New Fossil Shell from Peru. *Proc. Ac. Nat. Sci. Philad.* pt. i. p. 139, pl. 22.

Ostrea callacta, probably from the Pebas group. An *Acicula* is also figured.

Cotteau, Gustave. Echinodermes réguliers, terrain Jurassique. [Jurassic Echinidæ.] *Pal. Franç.* ser. 1, vol. x. pp. 1–96, plates 143–166.

The following species are newly described:—*Cidaris Toucasi*, from Rhætic of Dep. Var; *C. Corsei*, L. Lias of Haute-Marne; *C. Pellati*, L. Lias, from Côte d'Or, &c.; *C. pilosa*, a spine only, L. Lias; *C. subundosa*, a spine only, U. Lias; *C. Moriei*, U. Lias of Calvados; *C. Caraboeufi*, a spine, *ibidem*; *C. Charmassei*, from I. Ool. of Côte d'Or; *C. Collenoti*, *ibid.*; *C. Caumonti*, Inf. Ool. of Calvados; *C. Bajocensis*, *ibid.*; *C. Dumortieri*, spine only, I. Ool. near Lyons; *C. Lorteti* and *C. Chantrei*, spines, *ibid.*; *C. Munieri*, spine from I. Ool. near Nancy; *C. Babeaui*, Bath Ool. of Yonne, &c.; *C. Langrunensis*, Bath Ool. of Calvados; *C. Julii*, *C. episcopalis*, and *C. Cellensis*, spines from Bath Ool.; and *C. Desnoyersi*, Kellov., of Orne, of which a long list of synonyms is given. E. B. T.

——. Catalogue raisonné des Échinides fossiles du Département de l'Aube. [Detailed Catalogue of the Fossil Echinoids of the Department of the Aube.] Pp. 76; plates. 8vo. *Paris.*

Contains a full list of the species of Echinoids found in the Jurassic and Cretaceous deposits of the department. Each species is shortly treated of, especially in so far as specimens found in the region under consideration show any peculiarities. In the Jurassic rocks of the department there are 21 species known, belonging to 10 genera. In the Cretaceous rocks there are 55 species, belonging to 25 genera. Of the Jurassic species *Hemicidaris Leymeriei* and *Cyphosoma supracorallinum* are new. Of the Cretaceous species, *Echinoconus Icaunensis* is new. In conclusion, the author treats briefly of the genera land stratigraphical relations of the species catalogued. H. A. N.

Cotteau, G., A. Peron, and V. Gauthier. Échinides fossiles de l'Algérie, ... description des espèces déjà recueillies dans ce pays, et considérations sur leur position stratigraphique. [Algerian Fossil Echinoids.] *Ann. Sci. Geol.* t. vi. livr. 2, pp. 96; woodcuts and 8 plates.

The stratigraphical information is by M. Peron. In part 1, describes the U. Tithonic beds with *T. janitor*; these are considered decidedly Cretaceous, but it is noted that the Echini have Jurassic affinities: 7 species are cited, the following being new:—*Infraclypeus Thelebensis* (n. gen.), *Holectypus afer*, *Rhabdocidaris janitoris*, *Magnotia Meslei*. In part 2, the Neocomian beds are dealt with; from them are the new species:—*Echinospatangus subcavatus*, *E. Africanus*, *E. Villei*, *Pygurus eurypneustes*, *P. impar*, *Bothriopygus Meslei*, *B. Trapeti*, *Echinobrissus humilis*, *E. Durandi*, *E. Sebaensis*, *Echinoconus Soubdellensis*, *Rhabdocidaris Durandi*, *Acrosalenia miranda*, *Hemicidaris Meslei*, *Pseudodiadema Anouelense*, *Codiopsis Meslei*. E. B. T.

Credner, G. R. *Ceratites fastigiatus* und *Salenia texana*. *Zeitsch. gesammt. Nat.* Bd. xii. pp. 105–116, plate 5.

A description of 2 new species. *Ceratites fastigiatus*, from the upper Muschelkalk, Thüringer Haus, Gotha, is compared in a detailed table with *Ceratites nodosus*. *Salenia texana*, from the Cretaceous (?) of Texas, is compared in a similar table with *Salenia Prestensis*. E. T. N.

Crosse, H. Sur les caractères de l'opercule dans le genre *Neritopsis* [Characters of the operculum of *Neritopsis*.] *Journ. Conchyl.* pp. 57–66.

Certain irregularly discoidal bodies found in the Lias have much perplexed geologists. In 1858 MM. Deslongchamps described them under the name of *Peltarion*, and hazarded the conjecture that they were parts of *Cephalopoda*. M. Quenstedt thought that they might be *Brachiopoda*. Mr. Moore made one the type of his *Chiton radiatum*. In 1868 M. J. Beaudouin found two casts of *Neritopsis*, with Peltaria in the aperture; and the discovery of very slightly different opercula in recent species of *Neritopsis* may now be considered to have conclusively proved that these bodies are the opercula of species of *Neritopsis*.
C. P. G.

——. Description du nouveau genre *Berthelinia*. [New Genus *Berthelinia*.] *Journ. Conchyl.* pp. 79–81; pl. 2, fig. 3.

This genus is proposed for a microscopical shell, ½ millimetre long, from the lower *Calcaire grossier* of Courtagnon, apparently allied to *Pileopsis* and *Hipponyx*. One species, *B. elegans*, is described.
C. P. G.

Dall, W. H. Notes on some Tertiary Fossils from the California Coast, with a list of the Species obtained from a well at San Diego, California, with Descriptions of two New Species. *Proc. Calif. Ac. Sci.* vol. v. part 3, pp. 296–299.

A list of 69 species, mostly from fine sand 140–160 feet down. The new species are *Chrysodomus Diegoënsis* and *Waldheimia Kennedyi.*

Davidson, T. What is a Brachiopod? *22nd Ann. Rep. Brighton Nat. Hist. Soc.* p. 61. Translated in *Ann. Soc. Mal. Belg.* t. x. *Mémoires*, pp. 36–86, pls. iii., iv.

Distribution in time, pp. 71–76. In the French version (the fuller of the two) a folding table shows the range in time of each genus.

Dawson, Principal. Origin and History of Life on our Planet. An Address before the American Association for the Advancement of Science, at Detroit, Michigan. Pp. 26. *Montreal.*

Deals with the bearings of Palæontology upon the questions connected with the origin and history of life upon the earth, and upon the doctrine of descent with modification. Concludes that " the introduction of new species of animals and plants has been a continuous process, not necessarily in the sense of derivation of one species from another, but in the higher sense of the continued operation of the cause or causes which introduced life at first." Concludes also that " Palæontology furnishes no direct evidence, perhaps never can furnish any, as to the actual transformation of one species into another, or as to the actual circumstances of the creation of a species; but the drift of its evidence is to show that species come in *per saltum*, rather than by any slow and gradual process." H. A. N.

——. The Dawn of Life; being the history of the oldest known Fossil Remains, and their Relations to Geological Time, and to the Development of the Animal Kingdom. Pp. 239, eight illustrations, 49 woodcuts. *London.*

Deals principally with the history of the discovery of *Eozoön Canadense*, and with all the known facts bearing on its structure and nature. The author first gives a descriptive sketch of the Laurentian formation, accompanied by sections and a coloured map showing the distribution of the Laurentian limestones in the counties of Ottawa and Argenteuil. Secondly, a history is given of the various steps which led to the discovery of *Eozoön*, and a record of its interpretation by Carpenter and the author. Thirdly, a chapter is devoted to a consideration of the minute structure exhibited by *Eozoön*; and this is compared with the structure of recent *Foraminifera.* Chapter 5 is on the manner in which *Eozoön* has been preserved, and on fossilization by infiltration in general. In Chap. 6 the contemporaries and successors of *Eozoön* are considered, with special reference to *Archæosphærina*, *Stromatopora*, *Caunopora*, and *Receptaculites.* Another chapter is devoted to a consideration of the various objections urged against the organic nature of *Eozoön*; and a final chapter deals with certain speculative considerations which may be drawn from the study of this fossil. H. A. N.

Dawson, G. M. Note on the Occurrence of Foraminifera, Coccoliths, &c. in the Cretaceous Rocks of Manitoba. *Canad. Nat.* n. ser., vol. vii. pp. 252–257.

Some Cretaceous rocks from Pembina Mountain were found to resemble the so-called "chalk" of Nebraska. The greater part of the rock contained shells (*Inocerami* and oysters) in a "soft whitish earthy matter," which microscopic investigation proved to consist of Foraminifera, Coccoliths, and allied organisms. The forms described and figured are *Textularia globulosa*, *T. pygmæa*; *Discorbina globularis*; *Planorbulina Ariminensis*; and various forms of *Coccoliths* and *Rhabdoliths*. R. B. N.

Décocq, C. Sur les Inocérames de la craie du Nord. [Chalk Inocerami, France.] *Compt. Rend. Assoc. Franç.* for 1874, pp. 366–372.

Describes 8 species, of which the following are now:—*Inoceramus insulensis*, *I. Gosseleti*, and *I. Lezennensis*.

Dodge, W. W. On *Triarthus Beckii*, supposed to have been found in a boulder in the Connecticut Valley. *Amer. Journ.* ser. 3, vol. x. p. 300.

Dollfus, —. Observations critiques sur la classification des Polypiers paléozoïques. [Classification of Palæozoic Corals.] *Compt. Rend.* t. lxxx. pp. 681–683.

The Rugosa are divided into two classes, I. containing the *Zaphrentidæ* and the *Cyathaxonidæ*; II. the *Cyathophyllidæ*, *Monoastræidæ*, *Disastræidæ*, and *Polyastræidæ*. Among the Tabulata, the *Heliolitidæ* must be looked upon as the ancient representatives of the recent *Milleporidæ*; and the latter are Hydrozoa. The *Syringoporidæ* with the incrusting *Thecostegitidæ* and the creeping *Auloporidæ*, which constitute the *Zoantharia tubulata*, may correspond either to Bryozoa of the groups of the *Hippothoidæ* and of the *Idmoneidæ*, or to tubuliporous Alcyonaria. The *Chætetidæ* are closely allied to the Jurassic *Heteropora* and to the Cretaceous *Radiopora*. The *Favositidæ* present similar affinities to the tubuline Bryozoa. The *Dendroporidæ* would come near to the *Hornera* type of Bryozoa. The *Fenestrellidæ* would thus be no longer isolated. G. A. L.

Douvillé, H. Observations sur quelques-uns des fossiles cités dans la note précédente. [On some of the fossils mentioned in the preceding paper (see "Note on the Middle Jurassic of the Berry," p. 60).] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 112–133.

Notes on the characters and synonymy of 78 Middle Jurassic species.

Dufet, Henri. Note sur les déformations des fossiles contenus dans les Roches Schisteuses de la Bretagne. [Deformation of Fossils in the Slaty Rocks of Brittany.] *Ann. Sci. École Norm. Sup.* pp. 6.

Dumas, Emilien. Note sur la *Panopæa Aldrovandi*, découverte à l'état subfossile dans l'ancien cordon littoral de la Méditerranée. [Occurrence of *Panopæa Aldrovandi* in a sub-fossil State in the old Shore-deposits of the Mediterranean.] (Revue des Sciences Naturelles, publiée a Montpellier, t. iv. numero Septembre 1875.) *Journ. Zool.* t. iv. pp. 432, 433.

Panopœa Aldrovandi has been obtained in some abundance upon the shores of the Gulf of Lyons in a semifossil condition, indicating that, although very rare now at any part of the Mediterranean, it was common at the commencement of the Recent period. *Pecten maximus*, which is also found abundantly in a semifossil state, is now almost replaced by the *P. jacobœus*. E. T. N.

Duncan, Prof. P. M. On some Fossil Alcyonaria from the Australian Tertiary Deposits. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 673, 674, pl. xxxviii (A).

Describes specimens related to *Isis hippuris* (E. and S.), *I. corallina* (Mor.), and *I. coralloides* (Ed. and H.) from the No. 3 or Upper Coralline Bed of the Cape Otway Tertiary Section, Victoria (= the Polyzoal Limestone or "Crag" of the Mount Gambier Section, S. Australia). R. E., Jun.

——. On some Fossil Alcyonaria from the Tertiary Deposits of New Zealand. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 675, 676, pl. xxxviii (B).

Specimens referred to the genera *Isis* and *Corallium* are described from the Awawo railway-cutting, Oamaru, obtained in the upper part of the Oamaru Formation (= Trelissic Group of Hutton), probably Oligocene or U. Eocene. R. E., Jun.

——. On some Fossil Corals from the Tasmanian Tertiary Deposits. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 677, 678, pl. xxxviii (C).

Describes, under the name of *Dendrophyllia epithecata*, certain specimens forming a new section of the genus *Dendrophyllia*, with a fully developed wall-like epitheca. The deposit at Table Cape, Tasmania, from which this coral was obtained is correlated with the Lower Cainozoic series of the Australian mainland, from the occurrence in it of *Placotrochus deltoideus*, a coral possessing a well-marked and definite geological horizon in the latter. R. E., Jun.

Ehrenberg, Christian G. Fortsetzung der mikrogeologischen Studien als Gesammt-Uebersicht der mikroskopischen Paläontologie gleichartig analysirter Gebirgsarten der Erde, mit specieller Rücksicht auf den Polycystinen-Mergel von Barbados. [Continuation of Microgeological Studies, a General Review of the Microscopic Palæontology of Formations which have been similarly analyzed, with special reference to to the *Polycystina* Marls of Barbadoes.] *Abh. k. Ak. Wiss. Berlin*, pp. 225, 30 plates.

After a short introduction, the author gives a brief geographical review of the materials which he examined for microscopic organisms from 86 localities in different parts of the world, all yielding the remains of marine animals. The third part (pp. 6–105) is occupied with a detailed list of the names of all the organisms recognized in the marine deposits in question, the title, date and place of description, geological position, and geographical distribution of each species being given. This list includes the names of 520 kinds of "Polythalamia," 498 of "Polygastrica," and 326 species of *Polycystina*, the remaining being "Phytolitharien," "Geolithien," and "Zoolithien," with a few remains of Mollusks, Annelides, Entomostraca, Bryozoa, and plants. The next part (pp. 106–115) deals with the "Barbadoes earth," and is illustrated by 30 plates. A list of 367 species found in this deposit accompanies this section. The next part treats briefly of an organic deposit from Hillaby Mountain in Barbadoes; and this is followed by an account of the deposits containing *Polycystina* in the Nicobar Islands, with a list of 156 species. The remaining sections deal with the hard chalk of Antrim, and other organic deposits; but the most important is one treating of the microscopic organisms found in freshwater deposits, accompanied by full lists (pp. 169–225) of all the forms recognized therein by the author. In the explanations accompanying the plates illustrative of the organisms of the Barbadoes earth, the following new species are described—*Planulina mica*, *Rotalia*? *Barbadensis*, *Actinolithis apiculata*, *A. hexaclados*, *A. Neptunia*, *A. ornithopus*, *A. spinosa*, *A. tornata*, *A. trifida*, *Placolithis ocellata*, *Rhabdolithis falx*, *R. fungillus*, *R. ingens*, *R. pipa*, *R. sceptrum*, *R. serra*, *R. tortuosa*, *R. umbraculum*, *Stephanolithis annularis*, *S. nodosa*, *S. spinescens*, *Chlamidophora* (n. gen.) *Chilensis*, *Flustrella macropora*, *Halicalyptra setosa*, *Lithochytris Barbadensis*, *Lychnocanium falciferum*, *Stylodictya bispiralis*, and *S. Forbesii*. H. A. N.

Etheridge, Robert, Jun. Description of a New species of the Genus *Hemipatagus*, Desor, from the Tertiary Rocks of Victoria, Australia; with Notes on some previously described Species from South Australia. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 444–450, pl. xxi.

Gives a brief account of the bibliography of Australian Tertiary Echinodermata; describes *Hemipatagus Woodsi*, a new species from the Upper Tertiary beds of Mordialloc, Victoria. Gives short notes on a few previously described species; and a synopsis of Australian Tertiary Echinodermata. R. E., Jun.

——. Observations on some Carboniferous Polyzoa. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 116–122; plate.

Describes the genera *Synocladia*, *Polypora* and *Thamniscus*; notes the number of forms recognized as common to the Carboniferous and Permian. Describes *Synocladia biserialis*, var. *carbonaria*, from several localities in the L. and U. Carboniferous Limestone Groups of Scotland, with 6 drawings. W. T.

——. On some undescribed Carboniferous Fossils. *Geol. Mag.* dec. ii. vol. ii. pp. 241–245, pl. viii. [See also p. 278.]

Describes and figures *Modiola lithodomoides*, a new bivalve from the L. Carboniferous Rocks of England and Scotland.

Etheridge, Robert, Jun. Note on a New Provisional Genus of Ca boniferous Polyzoa. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 43– pl. iv. B. figs. 1–4.

Proposes the provisional name of *Hyphasmopora* for certain sm Carboniferous Polyzoa, which apparently cannot be referred to a previously described group. The genus is defined as follows :—"Pol zoarium dendroid (?), calcareous, composed of small cylindrical sten often bifurcating. Cell-depressions arranged in linear longitudin series, more or less separated from one another by a cancellated ne work or reticulation, forming the interstitial surface, and predominati at one part of the polyzoarium more than at others, presenting a long tudinal zone devoid, or nearly so, of cell-depressions. The interstiti network consists of a series of irregularly formed pores." The on known species is named *Hyphasmopora Buskii*, and is quoted fro various localities in the L. Carboniferous rocks of Scotland. H. A. 1

——. Notes on Carboniferous Lamellibranchiata. *Ann. Nat. Hi* ser. 4, vol. xv. pp. 427–434, pl. xx.

Contains a full description, with the synonyms, of *Myalina crass* Fleming; and also a description of the new species *Schizodus Salteri.*

——. On the Occurrence of a Species of *Retepora* (allied to *1 phœnicea*, Busk) in the Tertiary Beds of Schnapper Point, Hobson Bay, Victoria. *Trans. R. Soc. Vict.* vol. xi. pp. 13, 14.

Describes a new provisional species under the name of *R. McCoyan* The presence of *Spiroporina vertebralis* on the same piece of matrix pointed out. R. E., Ju

Favre, E. Description des fossiles du terrain jurassique de 1 montagne des Voirons (Savoie). [Jurassic Fossils from M Voirons.] *Abh. schweiz. pal. Ges.* vol. ii. pp. 77 ; 7 plates.

Describes 37 species, chiefly Ammonites, together with *Aptychu Belemnites*, and *Terebratula janitor.* The following are new—*Belemnit Voironensis*, *Ammonites Lucingæ*, *A. Pralairei*, *A. Navillei*, *A. hom nalis*, *A. Lemani.* The fossils are all from one locality, divided int two zones—the lower equivalent to the *transversarius*-zone (Oxfordian and the upper to the *tenuilobatus*-zone (Kimmeridgian); many specie however, are common to both. A comparison with the same zones i other localities of the Western Alps is added. E. B. 1

Fischer, M. P. Sur la présence dans les mers actuelles d'un type d Sarcodaires des terrains secondaires. [The Presence, in recen Seas, of a Secondary Type of Sponge.] *Journ. Zool.* vol. iv. pp 530–533, with part of pl. xvi.; and *Compt. Rend.* t. lxxxi. pp 1131–1133.

Contains a description of a sarcodic animal (*Dendrina europæa* found burrowing in the shells of Mollusca, which the author believe to be the recent representative of the *Dendrinæ* noticed in *Belemnitell* and the shells of other Secondary Mollusks. *Dendrina* differs fror *Cliona* in some important particulars: it is much smaller, has only single large perforation ; the burrows are not divided into separat chambers; very minute tubes pass from the burrows to the surface o the shell; no siliceous spicules could be discovered even with an enlargement of 500 diameters; the burrows are filled with a brown sarcode. The author considers this animal to be more nearly allied to the Rhizopoda than to the Sponges. E. T. N.

Fontannes, F. *Soc. Agric. Hist. Nat. Lyon.*

Valvata vallestris, *Helix delphinensis*, *Planorbis Heriacensis*, *Melampus Dumortieri*, *Auricula Viennensis*, *A. Lorteti*, and *Cyclostoma Falsani* are new species.

Frič, Dr. A. Ueber die Fauna der Gaskohle des Pelsner und Rakonitzer Beckens. *Sitz. math.-nat. Classe. k. böhm. Ges. Wiss.*

List of fossils from gas-coals of Nyřan, near Pelsen, and Kounova, near Rakonitz.

Friren, Abbé. Melanges Paléontologiques. Prem. Art. *Orthoidea*, *Straparolus*, *Ammonites*, *Aulacoceras*, and *Tisoa siphonalis* du Lias Moyen. [Palæontological Miscellanea. *Orthoidea*, &c. from the Middle Lias.] *Bull. Soc. Hist. Nat. Metz*, pp. 22; pls. i. and ii.

Describes the new species *Orthoidea liasina* and *Straparolus* (*Euomphalus*) *Metensis*, from the zone of *Ammonites margaritatus* and *Belemnites clavatus*, and from beds a little lower a new Ammonite (*A. Terquemi*). The characters, synonymy, and history of *Aulacoceras* (*Orthoceras*) *elongatum* are discussed; and the fossil is shown to belong to the *Belemnitidæ*. A note is added on the problematical *Tisoa siphonalis*. H. A. N.

Gabb, W. M. Notes on West Indian Fossils. *Geol. Mag.* dec. ii. vol. ii. pp. 544, 545.

Notes that certain fossil shells, described in a previous memoir, had been re-described by Mr. Guppy (*Geol. Mag.* dec. ii. vol. i. pp. 404, 433). Count Pourtales also adds a list of the fossil corals collected by Mr. Gabb from the Cretaceous, Miocene, and Post-Pliocene deposits of San Domingo. H. A. N.

——. Genesis of *Cassidaria striata*, Lam. *Proc. Ac. Nat. Sci. Philadel.* pt. ii. pp. 361, 362, pl. xxiv.

Traces the species from *C. lævigata* (Miocene of San Domingo) through *C. sublævigata* (Miocene of Jamaica) and a specimen from the Pliocene of Costa Rica. W. W.

Gardner, J. On the Gault Aporrhaidæ. *Geol. Mag.* dec. ii. vol. ii. pp. 50-56, 124-130, 198-203, 291-297, 392-400, pls. iii., v.-vii., xii.

The first four parts deal with the *Aporrhaidæ* of the Gault and the so-called U. Greensand of Blackdown. The new species described are *Aporrhais Griffithsii*, *A. Mantelli*, *A. Parkinsoni*, var. *Cunningtoni*, *A. histochila*, *A. oligochila*, and *A. pachysoma*; and descriptions of a number of previously recorded British forms are given. The concluding part treats chiefly of forms occurring in the Neocomian and Grey Chalk. The genus *Dimorphosoma* is proposed and defined, and the following new species belonging to it are described:—*D. kinclispira*, *D. ancylochila*, *D. pleurospira*, *D. Vectiana*, *D. doratochila*, *D. opeatochila*, and

D. spathochila. The author gives a synoptical grouping of the *Apo rhaidæ*, dividing them amongst *Ornithopus*, *Tridactylus*, *Aporrhais*, ar *Dimorphosoma.* H. A.

Geinitz, Eugen. [Insects, &c. from the Permian of Weissig, Saxony.] *N. Jahrb.* (see p. 66).

Goesle, —. Communication d'un travail sur la faune du Calcaire Caen. *Bull. Soc. Linn. Norm.* sér. ii. vol. ix. p. 340.

Goldenberg, Dr. Friedrich. *Fauna Saræpontana Fossilis.* Die fossil Thiere aus der Steinkohlenformation von Saarbrücken. [Foss Animals of the Carboniferous Formation of Saarbrück.] Part pp. 26, 2 plates. 4to. *Saarbrück.*

Describes the animal remains found before 1868 in the Carboniferou formation of Saarbrück. The following forms are described as new :– *Termes Buchi*, *Blattina anaglyptica*, var. *Labachensis*, *B. Tischbeini*, *insignis*, *Acridites formosus*, *Oniscina ornata*, *Arthropleura affinis*, *punctata*, *Branchipusites anthracinus*, *Estheria tenella*, and *Anthracosi gigantea.* Though dealing principally with Invertebrates, and mor especially with the Insecta, the author describes some remains Vertebrates (see p. 281). H. A.

Grainger, Rev. John. On some Irish Palæozoic Fossils. *Pro Belfast Nat. Hist. Phil. Soc., Sess.* 1874–75, pp. 30–32.

A general *résumé* of well-known Palæozoic Fossils. The occurrenc of angular pieces of granite in the Carboniferous Limestones of Mill town, near Dublin, and of jet in pockets of that at Castleknock, i referred to. E. T. H

Grote, Aug. R. and **W. H. Pitt.** Description of a New Crustacea from the Water-Lime Group at Buffalo. *Bull. Buff. Soc. Nat. Sc* vol. iii. pp. 1, 2; photographic plate.

Eusarcus scorpionis is described from the impression of the ventra surface. It is allied to *Eurypterus* and *Pterygotus*, but is thought t be higher, "from the peculiar differentiation of the body expressed b the narrowness of its cephalo-thoracic portion, and the sudden con striction of the terminal segments." W. W

——, ——. On New Species of *Eusarcus* and *Pterygotus* from th Water-Lime Group at Buffalo. *Bull. Buff. Soc. Nat. Sci.* vol. ii pp. 17–20.

Describes *Eusarcus grandis*, one of the largest known Crustacean from the Water-Lime Group, and *Pterygotus Cummingsiæ*, with drawing of one of the swimming feet (maxilliped or octognath). Thi is thought to be the first notice of a maxilliped of *Pterygotus* fron American beds. R. B. N

Gümbel, C. W. Beiträge zur Kenntniss der Organisation und sys tematischen Stellung von *Receptaculites.* [Organization and Sys tematic Position of *Receptaculites.*] *Abh. math.-phys. classe k bay. Ak. Wiss.* ii. Bd. xii. Abth. 1. pp. 170–215, pl. A.

After an exhaustive examination of *Receptaculites Neptuni*, the autho in the main confirms the conclusions arrived at by Mr. Billings with regard to the structure of the skeleton. He affirms, however, that the inner integument is not foraminated in the above species; and he lays great stress upon the fact that the plates of the outer and inner integuments, but especially of the former, are perforated by canals, which radiate from a central point, and run parallel with the flat surfaces of the plates. The pillars which connect the two integuments are hollow; and their central canals communicate with the tubes just spoken of, whilst these latter appear to open on the edges of the plates of the inner integument into the central cavity of the fossil. The true form of the fossil in *Receptaculites Neptuni* appears to have been cup-shaped. Upon the whole Dr. Gümbel concludes that there is no affinity between *Receptaculites* and the Sponges, but that the genus may be referred to the Foraminifera, though upon grounds different from those advanced by Mr. Salter. He also considers *Ischadites* and *Tetragonis* as identical with *Receptaculites*. H. A. N.

Guppy, R. J. Supplement to the Paper on West Indian Tertiary Fossils. *Geol. Mag.* dec. ii. vol. ii. pp. 41, 42.

This paper is supplementary to that in *Geol. Mag.* dec. ii. vol. i. p. 433, and contains descriptions of two new species, *Leda clava* and *Ditrupa dentalinum*. The name of *Crassinella* is proposed in substitution for that of *Gouldia*, preoccupied for a genus of birds. H. A. N.

Hantken, Max von. Die Fauna der *Clavulina Szabói*-Schichten. I. Foraminiferen. [Foraminifera of *Cl. Szaboi*-beds.] *Mitth. Jahrb. k. ung. geol. Anst.* iv. Heft i. pp. 88; 16 plates. [In Hungarian and in German.]

This division of the Hungarian Tertiaries in the district between the Bakony and Matra Hills consists at the top of clays and below of marls; in the latter occur *Nummulites*, *Orbitoides*, *Operculina*, *Heterostegina*, which are mostly absent in the former. The present instalment relates to the Foraminifera only; other classes of fossils will be treated of subsequently. The following new species are now described:—*Gaudryina textilarioides*, *G. irregularis*, *Clavulina cylindrica*, *Cornuspira oligogyra*, *Triloculina Porvaënsis*, *Nodosaria coarctata*, *N. Budensis*, *Dentalina sublaxa*. *D. intermedia*, *D. Budensis*, *D. Guembeli*, *D. semilævis*, *D. setosa*, *Lingulina glabra*, *Frondicularia superba*, *Flabellina striata*, *F. Budensis*, *Pleurostomella acuta*, *Marginulina subbullata*, *M. recta*, *M. indifferens*, *M. Budensis*, *M. pauciliculata*, *M. splendens*, *Cristellaria Schwageri*, *C. elegans*, *C. irregularis*, *C. Porvaënsis*, *C. minuta*, *C. minima*, *C. ornata*, *Robulina granulata*, *R. Baconica*, *Polymorphina acuta*, *P. subcylindrica*, *Dimorphina elegans*, *Cassidulina globosa*, *Bolivina elongata*, *B. nobilis*, *B. reticulata*, *Textilaria subflabelliformis*, *T. Budensis*, *T. elongata*, *T. globosa*, *Valvulina pectinata*, *Rhynchospira abnormis*, *Truncatulina compressa*, *T. costata*, *T. granosa*, *T. evoluta*, *T. Budensis*, *Discorbina elegans*, *D. eximia*, *D. Baconica*, *Pulvinulina lobata*, *P. pygmæa*, *P. similis*, *P. affinis*, *Siderolina Kochi*, *Nummulites Budensis*, *N. Madaraszi*.

A table shows which occur in the Oligocene of Germany and oth horizons. E. B.

Hantken, Max von. Uj adatok a déli Bakony föld-es oslenyta ismeretéhez. *Magyar kir földtani intézet Évkönoe.* Köl. iii. Fü 4, pp. 427–446, pls. xvi.–xx. [Hungarian version of the pap noticed in p. 69.]

The following new species are described and figured:—*Natica coc learis*, *Myliobatis superbus*, *Globiconcha Baconica*. Many previousl described species are noticed; and there are lists of fossils. W. W

Hartt, Prof. C. F., and **Richard Rathbun.** On the Devonian Tril bites and Molluscs of Ereré, Province of Pará, Brazil. *Ann. Ly Nat. Hist. N. York*, vol. xi. pp. 110–127.

The Devonian deposits of Ereré, as shown by an examination their Brachiopods, belong to the same period as the Hamilton Beds N. America. This conclusion is confirmed by an examination of th Trilobites and Mollusks, which are allied to, or identical with, know Hamilton species. The following new species are described:—*Dalmani Paituna*, *Homalonotus Oiara*, *Pleurotomaria Rochana*, *Holopea Fu maniana*, *Bellerophon Morganianus*, *B. Coutinhoanus*, *B. Gilletianu* *Nuculites Ererensis*, *Edmondia Pondiana*, *E. sylvana*, *Modiomorph Pimentana*, *Palæoneilo sulcata*, *P.* (?) *simplex*, and *Tentaculites Eldred gianus*. H. A. N

Hébert, Prof. E. Rectifications et Additions au Mémoire de MM Hébert et Toucas sur la Géologie du bassin d'Uchaux. [Corrections and Additions to MM. Hébert and Toucas's Memoir on th Uchaux Basin.] (See p. 70 and below.) *Bull. Soc. Géol. Franc* 3 sér. t. iii. pp. 195–198.

Temporarily suppresses the *Heterodiadema libycum* zone, confirms th correlation of the Uchaux grit with the Touraine chalk by fres evidence, and describes a new *Cidaris* (*C. pseudosceptrifera*) from tha horizon. Suppresses *Ostrea Hippuritarum* as equivalent to *O. Ca derensis*, Coquand, and adds several species of fossils to the lists in th memoir. W. H.

Hébert, Prof. E., and **M. Munier-Chalmas.** Fossiles du bassi d'Uchaux. *Ann. Sci. Geol.* t. vi. pp. 113–132; 3 plates of fossil

The palæontological appendix to the paper on the Upper Cretaceou of the Uchaux basin (Vaucluse) (see p. 70). The following new specie are described—*Ammonites Gardonicus*, *A. Valbonnensis* (Gault), *A* *Salazacensis*, *A. Arausionensis* (Cénomanien), *Turrilites Toucasi* (Gault *Pinna Reynesi* (Cénomanien), *Exogyra Mornasiensis* (Mornas grits), *Ostre Hippuritarum* (Hippurite limestone), *Holaster Brongniarti* (Gault *Hemiaster Gaudryi* (Cénomanien). E. B.

——, ——. Réponse aux observations de M. de Loriol. [Answe to M. de Loriol.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 567–57

Maintains the distinction of the Cretaceous *Holasters*—*H. lævi*

Brong., *H. nodulosus*, Goldf., *H. marginalis*, Ag., *H. Sandoz*, Dubois, and *H. Trecensis*, Leym., which de Loriol has united. W. H. D.

Hoërnes, Dr. Rud. Tertiär-Studien. [Tertiary Studies.] *Jahrb. k.-k. geol. Reichs.* xxv. Heft i. pp. 63–77, with 2 plates.

Article 6. "A contribution to the Neogen-fauna of S. Styria and Croatia," contains critical notes of species therefrom, *Valenciennesia Pauli* being new. 7. "*Valenciennesia*-beds from the Banat." A woodcut shows the position of the Lignite beds in the Sarmatian stage; above come the Congeria beds with *Valenciennesia* band at their base. *Congeria Banatica*, n. sp., is described, with notes on other fossils. [Notice of abstract of this in the GEOLOGICAL RECORD for 1874, p. 304.] E. B. T.

——. Vorlage von Petrefacten der Sotzkaschichten aus dem Kalniker Gebirge. [Preliminary Notice of Sotzka Fossils from the Kalnik Mts.] *Verh. k.-k. geol. Reichs.* pp. 83, 84.

Hopkinson, John, and Charles Lapworth. Descriptions of the Graptolites of the Arenig and Llandeilo Rocks of St. David's. *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 631–672, pls. xxxiii.–xxxvii.

Treats of the classification, distribution, and correlation of the Graptolites, and of the terminology to be employed in the descriptions of them, various new views being brought forward. The following new species are described and figured:—*Didymograptus sparsus*, Hopk.; *D. Nicholsoni*, Lapw.; *D. euodus*, Lapw.; *D. furcillatus*, Lapw.; *Tetragraptus Halli*, Hopk.; *T. Hicksii*, Hopk.; *Clematograptus implicatus*, Hopk.; *Climacograptus cœlatus*, Lapw.; *C. confertus*, Lapw.; *Phyllograptus stella*, Hopk.; *Trigonograptus truncatus*, Lapw.; *Ptilograptus cristula*, Hopk.; *P. Hicksii*, Hopk.; *P. acutus*, Hopk.; *Dendrograptus persculptus*, Hopk.; *D. arbuscula*, Hopk.; *D. Ramsayi*, Hopk.; *D. serpens*, Hopk.; *Callograptus radiatus*, Hopk.; *C. radicans*, Hopk.; *Dictyograptus cancellatus*, Hopk.; *D. Homfrayi*, Hopk.; and *D.* sp. Many old species are also described and figured. The name *Clematograptus* is proposed for a new genus allied to *Loganograptus* and *Clonograptus*. H. A. N.

Hunter, Dr. The Palæontology of the Carboniferous Strata, West of Scotland. Part ii., pp. 107. *Carluke.*

Having enumerated the Carboniferous strata in the West of Scotland, in Part I., the author now gives a list of the fossils occurring in the different beds of this series. Nearly all the fossils noticed are in the "Braidwood Collection," and are from the L. Coal Measures, L. Limestone series, M. Coal Measures, U. Limestone series, Millstone Grit series, and U. Coal Measures. A list of localities for the fossils mentioned in the catalogue is given. H. A. N.

Hutton, Capt. F. W. Description of three New Tertiary Shells in the Otago Museum. *Trans. N. Zealand Inst.* vol. vii. p. 458, pl. xxi. 3 figs.

The species described are *Cominella striata*, *Zizyphinus Hodgei*, both from blue clay at Wanganui, and *Venus* (?) *sulcata*, from limestone at Napier. R. E., Jun.

Hyatt, Prof, Alpheus. Two new Genera of Ammonites, *Agassiceras* and *Oxynoticeras*. *Proc. Boston Soc. Nat. Hist.* vol. xvii. pp, 225–235.

——. On the Biological Relations of the Jurassic Ammonites. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 236–241. Abstract in *Amer. Journ.* ser. 3, vol. x. pp. 344–349.

Traces the history of the evolution of the Ammonitidæ. In accounting for the perpetuation of the structural differences distinguishing groups, the action of natural selection has been limited by the author to the change of such of them as tend to appear first in varieties, and then by inheritance in larger groups in conformity with the law of "acceleration," by which the structural changes are assumed individually at an earlier and earlier period of existence. G. A. L.

——. The Jurassic and Cretaceous Ammonites collected in South America by Prof. James Orton, with an Appendix upon the Cretaceous Ammonites of Prof. Hartt's Collection. *Proc. Boston Nat. Hist. Soc.* vol. xvii. pp. 365–372.

The following new species are described:—*Caloceras Ortoni*, *Buchiceras* (n. gen.) *serratum*. Other species are referred to.

James, U. P. Catalogue of Lower Silurian Fossils of the Cincinnati Group, found at Cincinnati and Vicinity. New Edition. With descriptions of some new Species of Corals and Polyzoa. Pp. 8. Printed for the Author. *Cincinnati.*

Catalogues the occurrence of 368 species. The following species are described as new—*Chætetes* (?) *calycula*, *C. clavacoideus*, *C. Cincinnatiensis*, *C.* (?) *O'Nealli*, *Alveolites* (?) *granulosa*, *Ceramopora Nicholsoni*, *Ptilodictya acuminata*, and *Alecto nexilis*. H. A. N.

Johnson, Hawkins M. On the Organic Structure of Flint and of Meerschaum. *Journ. Quek. Micr. Club*, vol. iv. pp. 66–68.

By staining, with acetate of rosaniline, thin splinters of flints and thin slices of meerschaum, the organic structure of these bodies may be made visible. The latter substance is said to be a fossil sponge; so also is the pale green substance in Connemara Marble, and the soluble silica rock from the neighbourhood of Farnham, both of which have been examined by the same method of staining. E. T. N.

Jones, Prof. T. Rupert, and **J. W. Kirkby.** Notes on the Palæozoic Bivalved Entomostraca, No. xi. Some Carboniferous Ostracoda from Russia. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 52–58, pl. vi.

Describe a number of Ostracoda from the Carboniferous rocks of Russia. Besides previously recorded species, the following are recorded as new—*Primitia Eichwaldi* and *Cytherella Murchisoniana*. *Leperditia Okeni*, var. *obliqua*, and *Bairdia plebeia*, var. *munda*, are described as new varieties. H. A. N.

Jones, Prof. T. Rupert, and Prof. W. K. Parker. Lists of some English Jurassic Foraminifera. *Geol. Mag.* dec. ii. vol. ii. pp. 308–311.

Give lists of the *Foraminifera* occurring in the Lower Oolites, Oxford Clay, Kimmeridge Clay, and Portland Stone.

Kayser, Emanuel. Ueber die Billings'sche Gattung *Pasceolus* und ihre Verbreitung in paläozoischen Ablagerungen. [Billings's Genus *Pasceolus*, and its Distribution.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 776–783; with plate.

A fossil from the Middle Devonian of the Eifel is referred to the genus *Pasceolus*, and described and figured as a new species (*P. Rathi*). The author points out the range of the genus (L. Silurian to M. Devonian), and discusses its systematic position. He argues against placing it with the Cystideans, Crinoids, or Sponges; and it therefore seems that there is no other group to receive it but the *Foraminifera*, where the allied genus *Receptaculites* is placed. But the writer will not commit himself to this position. F. W. R.

Linnarsson, Dr. G. En egendomlig Trilobitfauna från Jemtland. [A peculiar Trilobite-fauna from Jemtland.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. no. 12, pp. 491–497, pl. xxii. figs. 1–5.

Describes a peculiar group of Trilobites found in certain beds in Jemtland, apparently appertaining to the "Middle Graptolite Schists." The species are of remarkable characters and new, the forms described being *Dicellocephalus Billingsi*, *Triarthrus Jemtlandicus*, *Remopleurides microphthalmus*, and *Bohemilla* (?) *denticulata*. H. A. N.

——. Ivå nya Trilobiter frå Skånes alunskiffer. [Two new Trilobites from the Alum Slates of Scania.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. no. 12, pp. 498–501, pl. xxii. figs. 6–10.

Describes two new Trilobites, *Liostracus* (?) *superstes*, and *Cyclognathus micropygus*. The genus *Cyclognathus*, founded for the reception of the latter form, is allied to *Peltura*. H. A. N.

Loretz, H. Einige Petrefacten der alpinen Trias aus den Südalpen. [Fossils of the Alpine Trias.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 784–841; 3 plates.

A detailed description of the fossils of the Alpine Trias from the neighbourhood of Ampezzo, supplementary to a paper on the stratigraphical geology of the district. [See GEOLOGICAL RECORD for 1874, p. 80.] Among the fossils described in the present paper are the following new species—*Ammonites* (*Ceratites*) *Pragsensis*, *Rhynchonella Toblachensis*, *R. tetractis*, *Spiriferina palæotypus* (3 varieties, *lineolata*, *acrorhyncha*, and *media*), *Nautilus Ampezzanus*, *Turbo epaphoides*, *Thecidium Tyrolense*, *Axosmilia alpina*, *Cladophyllia septannectens*, *Hemicardium dolomiticum*, *Trigonodus superior*. F. W. R.

Loriol, P. de. Description des Échinides tertiaires de la Suisse. [Tertiary Echini, &c.] *Abh. schweiz. Pal. Ges.* vol. ii. pp. 64; 8 plates.

This first part contains a description of 24 species, mostly from the

Nummulitic beds, the following appellations being new—*Cida* *Mayeri*, *Pygorhynchus Mayeri*, *Echinanthus Bosteri*. E. B.

Loriol, P. de. Coup d'oeil d'ensemble sur la Faune echinitique Foss de la Suisse. [Fossil Echinoids of Switzerland] *Bibl. Univ.* t. pp. 96–105.

A résumé of the fossil species of Echinoidea which have been describ from the Oolitic, Cretaceous, and Tertiary Strata of Switzerla special reference being made to the number of species in each formati and to the forms peculiar thereto. Certain changes in synonymy alluded to. E. T.

Lycett, John. Monograph of the British Fossil *Trigoniæ*. No. pp. 93–148, pls. xx.–xxvii. *Pal. Soc.*

Continues the descriptions and figures of the British species of *Trigon* 24 species are fully described, of which the following are new, and from different parts of the Cretaceous series—*Trigonia læviuscula*, *dædalea*, var. *confusa*, *T. nodosa*, var. *Orbignyana*, *T. Tealbyensis*, *Vectiana*, *T. Meyeri*, *T. Etheridgei*, *T. scabricula*, *T. Vicaryana*, *T. U* *warensis*, and *T. Cunningtoni*. The Upware deposit is described **J. F. Walker**, p. 145. H. A.

M'Coy, Prof. Frederick. On a third new Tertiary species of *T* *gonia*. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 316, 317, pl. xviii.

Describes a new species, *Trigonia Howitti*, from Pliocene san marls at Jemmy's Point, near the entrance of the Gippsland Lakes.

——. On a Tertiary *Pleurotomaria*. *Ann. Nat. Hist.* ser. 4, v xvi. pp. 101, 102; woodcut.

Describes a new *Pleurotomaria* (*P. tertiaria*) from Upper Mioce rocks near Maude, said to be intermediate in form between the t recent species *P. Adansoniana* and *P. Quoyana*. In a letter at p. 2 Prof. M'Coy calls attention to the fact that Goldfuss and Deshayes h each found a Tertiary species of this genus. E. T.

——. Prodromus of the Palæontology of Victoria, or Figures a Descriptions of Victorian Organic Remains. Dec. ii. pp. 37, plat 11, 12.

The following are the species described:—*Squalodon Wilkinso* from the Miocene sands of Castle Cove, Cape Otway; *Carcharod* *angustidens*, and *C. megalodon*, both from the Miocene sands of Bi Rock, near Geelong. Among the Mollusca, we have the gigan *Cypræa* (*Aricia*) *gigas*, exceeding any known Cowrie in size, from t Oligocene clay of Muddy Creek, near Hamilton, and Mornington, ne Mt. Eliza, accompanied by *C.* (*Aricia*) *gastroplax*, from the Oligoce limestone between Mts. Eliza and Martha, Hobson's Bay. Two spec of *Trigonia* are described:—*T. acuticosta*, from the Older Pliocene b of Mordialloc, Hobson's Bay, and U. Miocene beds of Muddy Cree and *T. simiundulata*, from the Bird Rock Bluff, near Geelong. A markable example of a Victorian Tertiary shell still living off the Ca of Good Hope is *Limopsis Belcheri*, which is figured and described, fr the Oligocene clays of Muddy Creek, &c. The European Terti species *L. aurita*, also found in the North Sea and Southern Ocean, li wise occurs in the Oligocene clays on the E. coast of Hobson's Bay and in *Septaria*-marl at Bird Rock Point. Another of the few living species in the Victorian Oligocene and L. Miocene beds is *Pectunculus laticostatus*. The last plate is devoted to Graptolites, of which 7 species are noticed. Turning to the vegetable kingdom, we are presented with three species of *Gangamopteris*, an Australian genus of Mesozoic Coal-plant established by Prof. M'Coy, *G. angustifolia*, *G. spatulata*, and *G. obliqua*, all from the Bacchus-Marsh Sandstone. The rocks associated with the coal-seams at Cape Patterson and the Barrabool Hills have yielded a new *Tæniopteris*, *T. Daintreei*; whilst at Bellerine, near Geelong, is found *Pecopteris australis*, a common plant in the Jerusalem Coal Field, Tasmania. R. E., Jun.

Makowski, Alexander. Ueber eine neue fossile Gasteropode "*Pterocera, gigantea*, nov. sp." [New Fossil Gasteropods "*P. gigantea*."] *Verh. nat. Ver. Brünn.* Bd. xiii.

Malaise, C. Sur le Terrain Silurien de la Belgique. [Belgian L. Silurian.] *Compt. Rend. 3 sess. Assoc. Franç.* pp. 374, 375.
List of fossils from the *Calymene incerta* beds of Gembloux. *Homalonotus Omaliusii* and *Orthoceras Belgicum* are new, but not described.

Mallada, Lucas. Sinopsis de las Especies fosiles que se han encontrado en España. *Bol. Com. Map. Geol. España*, t. ii. parts 1, 2, and 3, pp. 1–160 &c.; 24 plates.
In the introduction to this catalogue of the fossils discovered in Spain reference is made to the different publications wherein they are mentioned. Detailed descriptions of Silurian, Devonian, and Carboniferous fossils are given; and twenty-four lithographic plates represent some of the most important species. The following new species are described—*Eulima Donayreana*, *Pleurotomaria Vidalina*, *Bellerophon sub-Urii*, *B. Naranjoanus*, *B. gracilis*, *Conocardium Cortazari*, *Cardinia subovalis*. J. McP.

Manzoni, A. I Briozoi del pliocene antico di Castrocara. [Bryozoa of the older Pliocene of Castrocaro.] *Bologna.*

Marcou, Jules. On the *Terebratula Mormonii*. *Trans. Ac. Sci. St. Louis*, vol. iii. no. 2, pp. 252–255.
Relates to priority of discovery.

Mayer, C. Descriptions de Coquilles fossiles des terrains tertiaires supérieurs (suite). [New Shells from the Upper Tertiaries.] *Journ. Conchyl.* pp. 66, 67, pl. 2.
Describes *Cypræa Cocconii* from yellow sands of Castell'arquato, and *C. longiscuta* from upper blue marls of the same place.

——. Descriptions de Coquilles fossiles des terrains jurassiques (suite). [New Jurassic Shells.] *Journ. Conchyl.* pp. 232–241, pl. 10.
Describes *Pecten toarcianus*, *Avicula pernula*, *Arca solitaria*, *Astarte Gillieroni*, *Hipponyx anachoreta*, and *Turbo viator*. The following

species, imperfectly described or not figured by previous authors, re-described and figured—*Lucina Gabrieli*, Orbigny, *Ammonites neo gensis*, Oppel, *A. Doublieri*, Orb. C. I

Meek, Prof. F. B. Note on some Fossils from near the Eas Base of the Rocky Mountains west of Greely and Evans, Color and others from about two hundred miles further eastward, descriptions of a few new Species. *Bull. U. S. Geol. Surv. Te tories*, ser. 2, no. 1, pp. 39–47.

Gives a full list of the fossils obtained, with geological remarks, describes the following new species:—*Anomia micronema*, Ka Pacific Railway, 200 miles E. of Denver; *Corbicula? (Leptest planumbona*, same locality, from beds of the age of the Wyoming Bi Creek coal series; *Cyrena? Holmesi*, Ralston Creek, 3 or 4 miles of Golden City, Tertiary; *Sphæriola? obliqua*, Lefthand Creek, h way between Long Mount and Boulder City, highest Cretaceous b *Rhynchonella Endlichi*, E. of Animas river, associated with a sm *Productus*, of type *P. subaculeatus*, probably U. Devonian. R. E., J

Meneghini, G. Nuove specie di *Phylloceras* e di *Lytoceras* del Li superiore d'Italia. [New Species of *Phylloceras* and *Litoc* from the U. Lias of Italy.] *Pisa.*

Miller, S. A. Monograph of the Brachiopoda of the Cincinnati gr *Cincinn. Quart. Journ. Sci.* vol. ii. pp. 6–62; with 7 woodcuts.

Describes 52 species of Brachiopoda from the Cincinnati group Ohio, of which the following are new—*Lingula Van Hornei*, *Cra Dyeri*, *C. multipunctata*, *Orthis Meeki*, and *Trematospira* (?) *quad plicata.* H. A.

——. Acidaspis O'Nealli. *Cincinn. Quart. Journ. Sci.* vol. ii. 86, 87; woodcut.

Describes a new species of *Acidaspis* from the upper part of Cincinnati group, near Lebanon.

Moesch, Dr. C. Monographie der Pholadomyen. [The *Pholadomy* *Abh. schweiz. pal. Ges.* Thl. ii. vol. ii. pp. 79–135, pls. 28–40.

This second instalment includes 36 species, of which 5 occur England. It deals chiefly with Cretaceous and Tertiary species. T study of this genus leads the author to the suppression of ma synonyms. The plates illustrate 24 species in the present part; following are new—*P. Zitteli*, from the U. Kimmeridge, *P. Elisabet* from the Gosau beds, and *P. Haydeni* from Miocene, Switzerla A table shows the probable genetic relationship of the species noti in the entire monograph. E. B.

Moore, Charles. On the Presence of the Genera *Plicatocrinus*, *Co loderma*, and *Solanocrinus* in British Strata. *Geol. Mag.* dec. vol. ii. pp. 626, 627.

The specimen from the M. Lias described by Dr. Wright (Geol. M dec. ii. vol. ii. p. 505) as belonging to *Cotyloderma* is referred to *Plicatocrinus*. The author had previously found specimens of *Cotyloderma*; and he records the discovery of the genus *Solanocrinus* in British Oolitic strata. H. A. N.

Morelet, A. Appendice à la Conchyliologie de l'île Rodriguez. [Appendix to the Conchology of the Island of Rodriguez.] *Journ. Conchyl.* pp. 21–30, pl. i.

Contains descriptions of the following subfossil species found in caverns on the coast, with bones of the Dodo:—*Helix Bewsheriana*, *Cyclostoma bipartitum*, Mor., and *C. Bewsheri.* C. P. G.

——. Testacea in insula Mauritia a Cl. Dupont nuperrime detecta. [Shells lately found at the Mauritius by M. Dupont.] *Journ. Conchyl.* pp. 31, 32.

Helix cyclaria, *Pupa kelodes*, and *P. Mülleri*, subfossil.

Neumayr, Dr. M. Ueber Kreide-Ammonitiden. [Cretaceous Ammonitidæ.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. i. Bd. lxxi. pp. 639–693.

An introduction on the influence of descent in derivation of new forms, and as ground of classification here followed. Four forms of Ammonites appear in the Trias; and under the groups 1. *Arcestidæ*, 2. *Lytoceratidæ*, 3. *Trachyceratidæ*, 4. *Ægoceratidæ*, all the forms subsequently derived are classified; 33 genera are enumerated. Division 3 is exclusively Triassic. Div. 1 includes 2 subgenera, one of which, *Schlœnbachia*, is new, and includes the Cristati. Div. 2 includes *Hamites*, &c. Under Div. 4 is a new genus *Olcostephanus*, including *A. Asterianus*, &c., as is *Hoplites*, to include *A. angulicostatus*, *rhotomagensis*, &c. *Stoliczkaia*, n. gen., confined to India, *S. tetragona* and *clavigera* being new names for species originally referred by Stoliczka to *A. dispar*. A list of all the Cretaceous species in each genus is given. E. B. T.

——. Die Ammoniten der Kreide und die Systematik der Ammonitiden. [Cretaceous Ammonites and Classification of the Ammonitidæ.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft 4, pp. 854–942.

Apparently much the same as the above. Forms the new genus *Acanthoceras*, besides those mentioned above, and 4 families as above, except that *Tropitidæ* takes the place of *Trachyceratidæ.*

——. Die Congerien- und Paludinenschichten Slavoniens und deren Faunen. Ein Beitrag zur Descendenz-Theorie. [The *Congeria* and *Paludina* beds of Slavonia and their Fauna. A Contribution to the Evolution Theory.] Palæontological part, *Abh. k.-k. geol. Reichs.* Bd. vii. Heft 3, pp. 19–111; 10 pls. [Geological part by **C. M. Paul**, see p. 89.]

The new species described are *Cardium Slavonicum*, *C. speluncarium*, *C. Oriovacense*, *Pisidium* nov. sp. (cf. *supinum*, A. Schmidt). Besides these, a number of new forms of previously named species are describ Under the heading "Resultate" the author gives his views respect the equivalence of the beds yielding the fauna described, and as variation and descent, the latter being further elucidated in Plate where the relationship of the various species of *Vivipara* is sho diagrammatically, the original stem being represented by *V. achatinoi* and *V. Neumayri*. G. A.

Nicholson, Prof. H. A. Report upon the Palæontology of the Pı vince of Ontario. Printed by Order of the Legislative Assemb Pp. 96; 4 plates and 45 woodcuts. 8vo. *Toronto.*

This report is a continuation of one published in 1874 [see Geoı gical Record for 1874, p. 317], and contains an enumeration of 2 species of fossils from the Trenton Limestone, Utica State, Huds River formation, Niagara Limestone, Guelph formation, Cornifero Limestone, and Hamilton formation of W. Ontario. Many of t species are simply referred to by name; but descriptions, generally companied by figures, are given of all new species, as well as of the which have not been previously thoroughly examined, or described readily accessible works. The new species are—*Ptilodictya falciforn* (Trenton Limestone), *Favistella calicina* (Hudson River Group), *Di lograpsus Hudsonicus* (Hudson River Group), *Callopora minutissin* (Hamilton formation), *Stromatopora nulliporoides* (Hamilton formatioı and *Spirorbis spinuliferus* (Hamilton formation). A number of speci are for the first time enumerated as occurring in the Palæozoic deposi of Canada. H. A.

——. Notes on the Gasteropoda of the Guelph Formation of Canad *Quart. Journ. Geol. Soc.* vol. xxxi. pp. 543–551, pl. xxvi.

Gives descriptions and figures of *Murchisonia Loganii*, *M. turritiform* *M. macrospira*, *M. bivittata*, *M.* (?) *longispira*, *M. Vitellia*, *M. Hercyni* *M.* sp., *Cyclonema* (?) *elevata*, *Holopea Guelphensis*, *H. Gracia*, *Subulit ventricosus*, *Pleurotomaria solarioides*, and *P.* sp. *Murchisonia Boyl* and *Holopea* (?) *occidentalis* are described as new species. H. A.

——. Descriptions of New Species of *Cystiphyllum* from the Dev nian Rocks of North America. *Geol. Mag.* dec. ii. vol. ii. p 30–33, pl. i.

Describes the following new species:—*C. Ohioënse*, from the Corn ferous Limestone of Columbus, Ohio; *C. squamosum*, from the san locality; *C. fruticosum*, a singular compound form from the Corniferoı Limestone of W. Ontario; and *C. superbum*, from the Hamilton fo mation of Ontario. H. A.

——. Descriptions of New Species and of a New Genus of Polyzo from the Palæozoic Rocks of North America. *Geol. Mag.* dec. i vol. ii. pp. 33–38, pl. ii.

Founds the genus *Heterodictya* for the reception of a singular Pol zoön (*H. gigantea*) from the Corniferous Limestone of W. Ontari

The polyzoary agrees in most of its characters with *Ptilodictya*, but possesses tabulate cells. The following new species are described and figured:—*Ptilodictya cosciniformis*, *Fenestella Davidsoni*, and *Ceramopora Huronensis*, from the Hamilton formation of Ontario; and *Retepora Trentonensis* from the Trenton Limestone of Ontario. H. A. N.

Nicholson, Prof. H. A. On some of the Massive Forms of *Chætetes* from the Lower Silurian. *Geol. Mag.* dec. ii. vol. ii. pp. 175–177.

Discusses the affinities of *Chætetes petropolitanus*, Pand., and some allied forms. The name of *C. undulatus* is provisionally suggested for the lobate and undulated masses included by American palæontologists under *C. lycoperdon*, Say. H. A. N.

——. Descriptions of Species of *Hippothoa* and *Alecto* from the Lower Silurian Rocks of Ohio, with a description of *Aulopora arachnoidea*, Hall. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 123–127, pl. xi.

Describes and figures as new species, *Alecto auloporoides*, *A. frondosa*, and *A. confusa*, from the Cincinnati Group of Ohio. Gives a full description of *Alecto inflata* and *Aulopora arachnoidea*, and shows that the former is properly referable to the genus *Hippothoa*. H. A. N.

——. Descriptions of New Species of Polyzoa from the Lower and Upper Silurian Rocks of North America. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 177–183, pl. xiv.

The following species of Polyzoa are described as new, from the Cincinnati Group (L. Silurian) of Ohio:— *Ptilodictya falciformis*, *P. emacerata*, *P. flagellum*, *P. fenestelliformis*, *P.* (?) *arctipora*, and *Ceramopora Ohioënsis*. The name of *Fenestella nervata* is given to a new species from the Guelph Limestones (U. Silurian) of Cedarville, Ohio. H. A. N.

——. On a new Genus and some new Species of Graptolites from the Skiddaw Slates. *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 269–273, pl. vii.

The new genus *Azygograptus* is founded for Graptolites in which the polypary is simple, unilateral, consisting of a single monoprionidian stipe, which is developed from the central portion of the sicula on one side. The only species known is named *A. Lapworthi*. The new species *Thamnograptus Doveri* and *Didymograptus gibberulus* are described. H. A. N.

——. On the Mode of Growth and Increase amongst the Corals of the Palæozoic Period. *Trans. R. Soc. Edin.* vol. xxvii. pp. 237–249, pl. xvii.

Treats of the general and special peculiarities of growth and nonsexual reproduction exhibited by the Palæozoic corals. The general modes of growth are distinguished into:—1. Simple calicular gemmation; 2. Compound calicular gemmation; 3. Basal gemmation; 4. Parietal gemmation; and 5. Fission. The rest of the paper is a consideration

of the classificatory value of the mode of growth, and the re between the growth of different parts of a compound corallum.
H.

Nicholson, Prof. H. A. On the Bearing of Certain Palæontol Facts on the Darwinian Theory of the Origin of Species, and General Doctrine of Evolution. *Trans. Vict. Inst.* vol. ix. p

After a preliminary consideration of the general doctrine of tion, the author examines the chief propositions laid down b Darwin in his chapter on the "Imperfection of the Geological Re He next examines the succession of life in a series of confor deposits, with special reference to the presence or absence of a se graduated forms between the species which lived at the commenc of any single formation and those which were in existence at its The U. Silurian and Devonian deposits of N. America are select affording a good field for this investigation; and the bearings o question are especially examined as regards the *Brachiopoda* of deposits. A number of general propositions are laid down as t questions discussed.
H.

——. On *Favistella stellata* and *Favistella calicina*; with Not the Affinities of *Favistella* and Allied Genera. *Rep. Brit.* for 1874, *Sections*, pp. 89, 90.

——. The Palæontological Significance of the Migrations of Ani *Coll. Guard.* vol. xxviii. p. 746 (Abstract).

An address at the opening of the session of the Edinburgh G gical Society.

O'Meara, Rev. E. Foraminifera from Flint-nodule. *Quart. Journ.* vol. xv. p. 103.

Specimens of Foraminifera were found in the central cavity flint nodule from the chalk near Belfast.

Paetel, Fr. Die bisher veröffentlichen Familien und Gattungsna der Mollusken. [The Published Names of the Families and Ge of Mollusca.] Pp. iv, 229. 8vo. *Berlin.*

Refers to fossil as well as to recent forms.

Peach, C. W. Remarks on some of the Organic Remains of C wall in the Museum of the Royal Geological Society of Corn *Trans. R. Geol. Soc. Cornwall*, vol. ix. part 1, pp. 49–54.

The fossils, of which a list is given, include plants, Amorph Cœlenterata, Echinodermata, Annelida, Crustacea, Polyzoa, Brachiop Lamellibranchiata, Gasteropoda, Nucleobranchiata, Pteropoda, Ce lopoda, Pisces.
C. L. N

——. On the Discovery of Organic Remains in the Rocks of Ne Cove, near Porthalla, and of some curious organic-like masses quarry near Hoyle. *Trans. R. Geol. Soc. Cornwall*, vol. ix. pa pp. 55–58.

Crinoids and corals were discovered in a limestone from Porth and in searching in the neighbourhood for the beds whence it came portions of an *Orthoceras* were found. Some curiously striated rocks found in a quarry near Hayle closely resemble the fossils in the *Eophyton* sandstone of Sweden. C. L. N. F.

Pichler, Prof. Adolf. [Alpine Trias.] *N. Jahrb.* Heft iii. p. 265. [See GEOLOGY, p. 91.]

Describes at p. 278 a new species of *Inoceramus* from the *Chemnitzia* Limestone (Keuper) of Höttingergraben, Tyrol. It has been called *I. œnipontanus.* F. W. R.

Piette, Edouard. Sur plusieurs genres nouveaux ou peu connus de Gastéropodes. [New or little-known Gasteropod Genera.] *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 360–366, pl. iii.

Gives generic characters of *Eustoma*, *Ditretus*, *Petersia*, and *Brachytrema* (the 2nd and 3rd being new names for *Cerithium*-like genera). All are Jurassic, and closely allied. W. H. D.

Quenstedt, Prof. Friedr. Petrefaktenkunde Deutschlands. 1. Abth. Bd. iv. Echinodermen (Asteriden und Encriniden), Heft 7–10, pp. 432; atlas of 16 plates.

Pp. 1–21 give a general account of the anatomy of the Asteroidea, and a description of the principal existing genera. Pp. 22–125 treat of the fossil forms. The Ophiuroids are considered, both generally and in detail, as to the fossil species of the group, in pp. 125–158. The rest treats wholly of the fossil and recent Crinoids, principally the Secondary forms. H. A. N.

Rathbun, Richard. Preliminary Report on the Cretaceous Lamellibranchs collected in the vicinity of Pernambuco, Brazil. *Proc. Boston Soc. Nat. Hist.* vol. xvii. pp. 241–256.

Contains descriptions of the Mollusca obtained from the Cretaceous rocks near Pernambuco by the Morgan Expedition of 1870, under Prof. Hartt. The following new forms are described:—*Nucula Mariæ*, *Leda Swiftiana*, *L. Braziliensis*, *Arca Orestis*, *A.* (*Cucullæa*?) *Harttii*, *Cucullæa subcentralis*, *Cardita Morganiana*, *C. Wilmotii*, *Lucina tenella*, *Cardium Soaresanum*, *Callista M'Grathiana*, and *Tellina Pernambucensis.* H. A. N.

Rathbun, Richard, and **Prof. C. F. Hartt.** On the Devonian Trilobites and Molluscs of Ereré, Province of Pará, Brazil. *Ann. Lyc. Nat. Hist. N. York*, vol. xi. pp. 110–127.

Richter, R. [Thuringian Slates.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft ii. p. 261, plate. [See p. 94.]

The following new species are described and figured, from the U. Silurian slates of Thuringia:—*Discina dissimilis*, *Dicranograptus posthumus*, and *Monograptus microdon.* F. W. R.

Sandberger, Prof. C. L. F. Die Land- und Süsswasser-Conchylien der Vorwelt. [Land- and Freshwater Shells of the Past.] Concluding volume, text, pp. 353–956. 4to. *Wiesbaden.*

Describes the land and freshwater shells of the Miocene, Pliocene,

and Pleistocene deposits. Pp. 353–355 belong to the preceding part, in which the Oligocene Mollusca are described. From the Miocene deposits the following species of land and freshwater shells (in addition to forms previously recorded) are described as new—*Valvata gracilis, Helix subconspurcata, Succinea peregrina, Planorbis* (*Anisus*) *amblytropis, Euchilus gracilis, Helix* (*Coryda*) *crepidostoma, H.* (*Macularia*) *Eckingensis, H.* (*Dentellaria*) *brachystoma, Clausilia Eckingensis, Alexia suturalis, Bulimus* (*Petræus*) *turgidulus, Planorbis pompholycodes, P. crassilabris, Dreissena alta, Melanopsis glandicula, Alexia polyodon, Clausilia* (*Triptychia*) *obliquiplicata, Helix* (*Vallonia*) *subpulchella, Bithynia gracilis, Nematurella flexilabris, Valvata radiatula, Carychium gibbum, Patula* (*Charopa*) *euglyphoides, Patula* (*Janulus*) *supracostata, Helix osculina, H.* (*Fruticicola*) *catantostoma, H.* (*Macularia*) *subvermiculata, H. malleolata, Cæcilianella acicuella, Pupa* (*Torquilla*) *subfusiformis, P.* (*Vertigo*) *farcimen, P.* (*Modicella*) *trochulus, Archæozonites costatus, Helix* (*Macularia*) *platychelodes, H. geniculata,* and *Clausilia* (*Triptychia*) *suturalis.* From the Pliocene deposits the following new species are described, along with those previously recognized—*Melania gracilicosta, Assiminea subaurita, Helix* (*Fruticicola*) *goniostoma, Paludina ventricosa, Planorbis* (*Armiger*) *geniculatus, P.* (*Segmentina*) *filocinctus, Carychium pachychilum,* and *Valvata inflata.* From Pleistocene deposits are described as new—*Planorbis* (*Segmentina*) *micromphalus, P.* (*Gyrorbis*) *calculiformis, Helix* (*Fruticicola*) *alveolus, H.* (*Fruticicola*) *raripila* (Loess), and *H.* (*Pentatænia*) *Tonnensis.* Concludes with a tabular view of the genera and subgenera of land and freshwater shells known to occur in Europe, as regards their stratigraphical distribution.
H. A. N.

Scudder, Samuel H. Fossil Butterflies. *Mem. Amer. Assoc.* vol. i. pp. xi, 99; 3 pls.

An account of all the known remains of fossil Lepidoptera. The author agrees with Mr. Butler in regarding *Neorinopsis sepulta* as belonging to the Satyridæ. The new genus *Lethites* is established for the reception of the *L.* (*Satyrites*) *Reynesi* from the Tertiaries of Aix. The *Vanessa atavina* of Heer (the *Sphinx atava* of Charpentier) is referred to the genus *Eugonia.* The new genus *Mylothrites* is founded for the famous *Vanessa Pluto* (Heer), and the genus *Coliates* for a new species (*C. Proserpina*) from the Tertiaries of Aix. Heer's *Pierites Freyeri* is referred to *Pontia*; and his MS. genus *Thaites,* with the single species *T. ruminiana,* is described. The new genus *Thanatites* is established for Von Heyden's *Vanessa vetula*; and a new butterfly from the Tertiaries of Aix is described under the name of *Pamphilites* (n. gen.) *abdita.* The author discusses the comparative age of fossil butterflies, the probable food-plants of Tertiary caterpillars, the present distribution of butterflies most nearly allied to the fossil forms, and the affinities of certain fossil insects which have been referred to butterflies. The *Cyllonium Boisduvalianum* and *C. Hewitsonianum* of Westwood, from the Purbeck Beds, are thought not to be Lepidopterous, but to be of undeterminable affinities, whilst the *Palæontina Oolitica* of Butler is regarded as Homopterous. H. A. N.

Scudder, S. H. The Tertiary Physopoda of Colorado. *Bull. U.S. Geol. Surv. Territories*, ser. 2, no. iv. pp. 215–31, plates.

The following new species are described:—*Melanothrips extincta*, Chagrin Valley; *Lithadothrips* (n. gen.), allied to *Melanothrips*, Haliday; *L. vetusta*, Fossil Cañon; besides *Palæothrips* (see *Geol. Mag.* vol. v. p. 231), and *P. fossilis* (*loc. cit.*), Fossil Cañon. R. E., Jun.

——. (Remains of Insects in Carboniferous shale at Cape Breton.) *Proc. Boston Soc. Nat. Hist.* vol. xviii. pp. 113, 114.

Seguenza, G. Studi paleontologici sulla fauna malacologica dei sedimenti pliocenici depositati a grandi profondità. [Deep-sea Pliocene Mollusca.] 8vo. *Pisa.*

Stefani, Carlo de. Di alcune conchiglie terrestri fossili nella terra rossa. [Fossil Land-shells from the *Terra rossa.*] *Pisa.*

Stoppani, Ant., and **J. Meneghini.** Paléontologie lombarde, &c. ser. 4, nr. 1–8. *Milan.*

Tate, Prof. Ralph. On some New Liassic Fossils. *Geol. Mag.* dec. ii. vol. ii. pp. 203–206; woodcut.

The following new species, from the Liassic rocks in the neighbourhood of Banbury, are described—*Ammonites acutus*, *Patella Beesleyi*, *P. gratans*, *Purpurina armata*, *Trochus tiarellus*, *Cerithium confusum*, *C. ferreum*, and *Spiropora Liassica.* H. A. N.

Thomson, James. On the Family Cyathophyllidæ—Tribe, Aspidiophyllacea—Genus, *Aspidiophyllum*. *Proc. Phil. Soc. Glasgow*, vol. ix. no. 2, pp. 153–162, pls. i. & ii.

Describes a new genus, nearly allied to *Clisiophyllum*, under the name of *Aspidiophyllum*. The genus is distinguished from *Clisiophyllum* by having the calicine boss helmet-shaped instead of being conical, one half being dome-shaped, "whilst the other half slopes down to the inner margin of the primary septa on the dorsal side of the calice." The following new species of the genus are described and figured—*Aspidiophyllum Koninckianum*, *A. Huxleyanum*, *A. cruciforme*, *A. elegans*, and *A. Hennedii*, all from the Lower Carboniferous rocks of Scotland; but the author records the occurrence of species of this genus in the Carboniferous deposits of Cumberland, Wales, and Ireland. H. A. N.

Thomson, James, and **Prof. H. A. Nicholson.** Contributions to the Study of the chief Generic Types of the Palæozoic Corals. *Ann. Nat. Hist.* ser. 4, vol. xvi. pp. 305–309 and 424–429, pl. xii.

Introduction.—The object is to consider briefly the characters of the leading *types of structure* which may be recognized amongst the Palæozoic Corals. The difficulty of determining the limits of a genus or species in a group of animals which exhibit so many variations as the corals has decided the authors to adopt the plan of selecting certain well-marked types, to which names will be given. The series of carefully sliced and polished specimens which the authors possess enables them to undertake this method. "No type will be described which is not at the same time accurately figured; and the *facts* thus recorded will remain unchanged, and will retain their value whatever alteration may take place in our method of interpreting them."

In the second instalment the authors describe and define the genera *Amplexus* and *Zaphrentis*. E. T. N.

Toula, Dr. Franz. Permo-Carbon-Fossilien von der Westküste von Spitzbergen. *Neues Jahrb.* Heft 3, pp. 225–264; with 6 plates (fossils) and 3 woodcuts (map and section).

Describes fossils got by Dr. R. von Drasche from the W. coast of Spitzbergen (see Geological Record for 1874, p. 108). They are of mixed Permian and Carboniferous types. Gives table of Permo-Carboniferous fossils from collections by Drasche, Payer, and Höfer; it includes 64 species, of which 38 are Carboniferous and 17 Permian. The following new species are described—*Polypora grandis*, *Ranipora* (n. gen.) *Hochstetteri*, *Phyllopora Laubei*, *Productus Aargardi*, *P. impressus*, *Spirifer Draschei*, *S. Parryanus*, *Chonetes capitolinus*, *Aviculopecten Drashei*, *Clisiophyllum Geinitzii*, *C. Nordenskiöldi*, and *Pleurotomaria arctica*. Several new varieties are also described. F. W. R.

——. Eine Kohlenkalk-Fauna von den Barents-Inseln. [Carboniferous Fauna of Nova Zembla.] *Sitz. k. Ak. Wiss. Wien, math.-nat. Cl.* Abth. i. Bd. lxxi. pp. 527–608; and 6 plates.

97 species are the result of Prof. Höfer's collecting on Barent's Isle during the Arctic Expedition of 1872. A table shows the distribution of identical or analogous species in Spitzbergen and other localities. The following are new appellations—*Naticopsis lævigata*, *Chemnitzia Höferiana*, *Euomphalus bifurcatus*, *Pleurotomaria Georgiana*, *P. Serafine*, *Capulus lævis*, *C. minimus*, *Bellerophon pulchellus*, *Chonetes rotundatus*, *Avicula Höferiana*, *A. laticostata*, *Allorisma Barentina*, *Edmondia gracilis*, *Polypora subquadrata*, *P. crassipapillata*, *P. pustulata*, *Archimedipora arctica*, *Fenestella inconstans*, *Campophyllum intermedium*, *Callopora arctica*, *Chondrites elegantissimus*, *Lithostrotion grandis*.

E. B. T.

Tournouër, R. Diagnoses d'espèces nouvelles d'eau douce recueillies par M. Gorceix dans les terrains tertiaires supérieurs de l'île de Cos. [New Freshwater Shells from the U. Tertiaries of Cos.] *Journ. Conchyl.* sér. 3, t. xv. pp. 76–78.

Describes as new—*Limnea* (*Acella*) *Cosensis*, *Melanopsis Gorceixi*, *M.*

ægea, *M. proteus*, *M.* (*Lyrcea*) *Delessei*, *Vivipara* (*Paludina*) *Forbesi*, *V. Gorceixi*, *V. Cossensis*, and *V. trochlearis*. C. P. G.

Tournouër, R. Étude sur quelques espèces de Murex fossiles du falun de Pont-Levoy en Touraine. [Fossil Murices from the Falun of Pont-Levoy, Touraine.] *Journ. Conchyl.* sér. 3. t. xv. pp. 144–166, pl. 5.

Describes:—*Murex* (*Pteronotus*) *Delaunayi*, T.; *M.* (*P.*) *cyclopterus*, Millet; *M.* (*P.*) *Vindobonensis*, Hörnes, var. *Ligeriana*, Tourn.; *M.* (*Cincoreus*) *Dujardini*, T.; and *M.* (*C.*) *Bourgeoisi*, T. Concludes with some general considerations, proving that the *Murices* of Touraine consist of a few European types, with a majority of exotic forms, W. African and Asiatic. C. P. G

——. Diagnose d'une Coquille fossile des terrains tertiaires supérieurs d'eau douce de l'île de Cos. *Journ. Conchyl.* sér. 3, t. xv. p. 167.

Diagnosis of *Pyrgula Brusinai* from the Upper Freshwater Tertiaries of Cos.

——. Addition à l'étude sur quelques espèces fossiles du falun de Pont-Levoy en Touraine. [Addition to the article on Fossils from Pont-Levoy.] *Journ. Conchyl.* sér. 3. t. xv. p. 242, pl. xv. fig. 6.

An immense specimen of *Murex Dujardini* has been found, 75 mill. long and nearly 50 broad. C. P. G.

——. Note sur le groupe des Cyllene fossiles des terrains miocènes de l'Europe. [The European Miocene Species of *Cyllene*.] *Journ. Conchyl.* sér. 3, t. xv. pp. 329–335, pl. xv. figs. 1–5.

Considers that there is a gradual transition from *C. Desnoyersi*, Bast, to the recent *C. lyrata*, and figures several forms in confirmation of this opinion. C. P. G.

——. Coup d'œil sur la faune des couches à Congéries et des couches à Paludines de l'Europe centrale et méridionale, à l'occasion d'un récent travail de M. S. Brusina. [The Fauna of the *Congeria* and *Paludina* beds of Central and Southern Europe, with reference to a work by M. S. Brusina (see GEOLOGICAL RECORD for 1874, p. 289)]. *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 291–298.

Concludes:—1. That the fauna of the *Congeria* beds is allied to that of Asia by some types of Melaniadæ, and to that of Asia by its *Valenciennesiæ*, but is essentially European in character. 2. That the fauna of the *Paludina* beds partakes of the European, N. American, and Asiatico-American types. 3. That neither of the two faunas is in any degree African. G. A. L.

——. Considérations sur les Echinodermes du Calcaire à Astéries. [The Echinoderms of the *Asteria* Limestone.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 484–490.

The Echinoderms of this limestone (which is Tongrian = Middle

Oligocene) in the basins of the Gironde and of the Adour are represented by 24 or 25 species. There are no Crinoids; the Stelloridæ onl furnish one species, *Crenaster lævis*, which gives its old name (*Asterias* to the formation; of Cidaridæ there are 3 genera with as many species the Clypeastroidæ are represented by 8 species belonging to 7 genera and, lastly, the Spatangoidæ present 10 species of 6 genera. Two o three doubtful species of *Periaster* (?), *Euspatangus*, and *Echinocyamu* make up the total number. The paper consists chiefly of a discussio of the relations existing between this fauna and those of the othe principal Tongrian basins of France. G. A. I

Trautschold, H. Ueber *Ammonites bicurvatus*, Mich. *Bull. So Imp. Nat. Mosc.* t. xlviii. p. 394.

Tribolet, Maurice de. Supplément à la description des Crustacés d terrain néocomien du Jura Neuchâtelois et Vaudois. [Supplemen to the Descriptions of the Neocomian Crustacea of the Neuchâteles and Vaudese Jura.] *Bull. Soc. Géol. France*, 3 sér. t. iii. pp. 72 81, pl. i.

The following species are figured:—*Callianassa infracretacea*, Trib. *Meyeria ornata* (Phill.), McCoy; *Glyphea Couloni*, Trib.; *Palæastacı macrodactylus*, Bell; *Palæno dentatus* (R.), Rob.; *Hoploparia Latreill* (Rob.), Trib.; *H. neocomensis*, Trib. A list of all the Brachyurous Decapods ends this paper. G. A. l

——. Description des Crustacés décapodes des étages néocomien e urgonien de la Haute-Marne. [Neocomian and Urgonian Decapoda of the Haute-Marne.] *Bull. Soc. Géol. France*, 3 sér. t. ii pp. 451-459; 1 plate.

The following species are figured, besides some mentioned above:- *Glyphea carinata*, Trib.; *G. Meyeri*, Trib.; *Hoploparia Edwardsi* (Rob. Trib.; *H. granulosa*, Trib.; *H. Cuvieri* (Rob.), Trib.; *Prosopon oviform* (Bell), Trib.; *Caloxanthus Tombecki*, Trib. No new species are described. G. A. l

——. Sur l'*Unio Cornueli*, Orb. *Journ. Conchyl.* sér. 3, t. x pp. 242-245.

D'Orbigny at first identified a species of *Unio* from the Oolitic ironstone of Vassy with the *Unio Martini* from the Wealden, but afterwar recognized that the shells differed, and named the Vassy species *U* *Cornueli*. D'Orbigny wrongly attributed the name *Martini* to Fitto instead of to Sowerby. *U. Cornueli* has since been found also in th Neocomian of Hauterive, near Neuchâtel. C. P. (

——. Sur une nouvelle espèce de Crustacé décapode macroure d terrains valangien et urgonien de Sainte-Croix. [New Macruro Crustacean from Sainte-Croix.] *Bull. Soc. Vaud. Sci. Nat.* vo xiii. pp. 657-660; plate.

Claws from the L. Cretaceous of Sainte-Croix are referred to t genus *Gebia*, which has previously been found in the Neocomian. *G. controversa* is the name given. E. B. T.

Tromelin, Gaston de, and Paul Lebesconte. Note sur quelques Fossiles des Grès Siluriens de Saint-Germain-sur-Ille, La Bouexière, Champeaux, &c. [Fossils of the Silurian Sandstones of Saint-Germain-sur-Ille, &c.] Pp. 8. 8vo. *Quimper.*

The sandstones of St. Germain, sometimes believed to be Devonian, contain Graptolites (*Diplograptus* &c.), and are L. Silurian. Amongst the other fossils a large proportion are known to occur in the sandstones of May (Calvados), and some also are identical with forms from the pebble-beds of Budleigh Salterton (Devon) and from the sandstones of Gorran Haven (Cornwall). The following new species are described, but not figured:—*Calymene Bayani*, *Orthoceras subfractum*, *Lyrodesma Dufeti*, and *L. securis*. The new genus *Pseudarca*, allied to *Cucullella*, is founded for the reception of a single species, *P. typa*.
H. A. N.

Vischniakoff, N. Notice sur les Couches Jurassiques de Syzran. [Jurassic Beds, Syzran.] *Bull. Soc. Imp. Nat. Mosc.* t. xlviii. no. 3, pp. 211–224, pl. vii.

Brief description of several L. Jurassic species, of which *Ammonites Volgensis* is new.

Waagen, Dr. W. Palæontologia Indica. Jurassic Fauna of Kutch. Vol. I. parts 2, 3, 4, pp. 23–247, pls. 5–60, with index. Series ix. parts 2, 3, 4. Cephalopoda, Ammonitidæ. *Geological Survey of India.* Fol. *Calcutta.*

The new species described are—*Phylloceras Jaraense*, *P. insulare*, *P. bodaiense*, *Lytoceras rex*, *Amaltheus Schaumburgi*, *Haploceras deplanatum*, *H. propinquum*, *Oppelia nurrhaensis*, *O. plana*, *Harpoceras lairense*, *H. dynastes*, *H. crassifalcatum*, *H. trilineatum*, *Petoceras propinquum*, *P. semirugosum*, *P. bidens*, *Aspidoceras diversiforme*, *A. tenuispinatum*, *A. ponderosum*, *A. sparsispinum*, *A. subdistractum*, *A. monacanthum*, *A. iphiceroides*, *A. Wynnei*, *A. binodiferum*, *Stephanoceras transiens*, *S. polyphemus*, *S. subtumidum*, *S. semilæve*, *S. arenosum*, *S. chrysoolithicum*, *S. diadematum*, *S. dimerum*, *S. magnumbilicatum*, *S. subtrapezinum*, *S. subcompressum*, *S. excydum*, *Perisphinctes obtusicosta*, *P. Dhosaensis*, *P. omphalodes*, *P. hians*, *P. altiplicatus*, *P. perdagatus*, *P. pseudorion*, *P. paramorphus*, *P. lateralis*, *P. arcicosta*, *P. congener*, *P. cobra*, *P. aberrans*, *P. gudjinsirensis*, *P. præcursor*, *P. subevolutus*, *P. subcolubrinus*, *P. pagri*, *P. euplocus*, *P. indogermanus*, *P. rota*, *P. obliquiplicatus*, *P. bathyplocus*, *P. occultifurcatus*, *P. alterniplicatus*, *P. densiplicatus*, *P. virguloides*, *P. sparsiplicatus*, *P. leiocymon*, *P. decorus*.

It is found that most of the Cephalopoda are restricted to single beds, only very few being common to different beds. A detailed table of distribution in time of all the Kutch Jurassic Cephalopoda is given in pp. 215–224. E. T. N.

Woods, Rev. J. E. T. On some Tertiary Fossils from Table Cape. *Monthly Notices R. Soc. Tasm.* pp. 13–26.

Correlates the beds from which the fossils were taken with a portion of the Cape Otway series, Victoria. Enumerates the fossils observed by him, amongst them the following new species are described—viz. *Terebra simplex*, *Typhis M'Coyi*, *Fusus Robbsii*, *F. gracillimus*, *Natica Winshi*, *N. polita*, *Cypræa Archeri*, *Triton Abboti*, *Crassatella aphrodina*, *C. oblonga*, *Voluta Weldii*, *Lyonsia Agnewi*, *Solecurtus Legrandi*, *Venus Alporti*. R. E., Jun.

Woodward, S. P. A Manual of the Mollusca, being a Treatise on Recent and Fossil Shells. Ed. 3. With an Appendix of Recent and Fossil Conchological Discoveries, by **Ralph Tate**. Pp. xiv, 542, 86; 23 plates and many woodcuts. 8vo. *London.*

The Appendix treats of those recent and fossil shells not mentioned in Ed. 2. It contains, therefore, descriptions of all genera founded since 1866. It is separately paged, and is illustrated by 27 woodcuts. H. A. N.

Worthen, A. H., and F. B. Meek. Descriptions of Invertebrates. *Geological Survey of Illinois*, vol. vi. Palæontology, Section ii. pp. 489–532, pls. xxii.–xxxiii.

The first section deals with the L. Silurian species, the following new forms being described:—*Cnemidium ? Trentonense*, *Ambonychia Illinoisensis*, and *Cyrtoceras Carrollensis*. Several previously described forms are noticed and figured. The second section treats of the fossils of the U. Silurian, a number of known species being described, together with the following new forms—*Eucalyptocrinus magnus*, *Orthoceras rectum*, *O. unionense*, and *Phragmoceras Byronense*. The third section is concerned with certain Devonian forms, the following being described as new—*Calceocrinus Barrisi* and *Aviculopecten unionensis*. The next section treats of the fossils of the L. Carboniferous rocks, from which *Dorycrinus Kelloggi*, *Barycrinus striatus*, *Poteriocrinus Hoveyi*, *P. Coreyi*, *P. Van Hornei*, *P. proboscidalis*, *Scaphiocrinus abnormis*, *Onychocrinus magnus*, *Pentremites* (*Tricœlocrinus*) *Varsouviensis*, *Myalina Keokuk*, and *Pinna subspatulata* are described as new. Finally, some of the Coal Measure fossils are treated of, the following being described as new—*Axophyllum infundibulum*, *Cyathoxonia distorta*, *Chætetes ? carbonaria*, *Poteriocrinus La Sallensis*, *Eupachycrinus Craigii*, *E. Bassetti*, and *Nautilus* (*Discites*) *Highlandensis*. All the new species are by Worthen. H. A. N.

Wright, Joseph. On the Discovery of Microzoa in the Chalk-flints of the North of Ireland. *Rep. Brit. Assoc.* for 1874. *Sections*, pp. 95, 96, and under the title, "Flints, and the Foraminifera, Entomostraca, &c. contained in them." *Proc. Belfast Field Club*, ser. ii. vol. i. pt. 1, pp. 46, 47.

Notes the discovery of organisms in the soft material in the cavities of flints from the Irish Chalk. Most of these (69 species) are Foraminifera; and besides these, 11 species of Ostracoda, 33 forms of sponge-spicules, Corals, and Polyzoa. H. A. N.

Wright, Joseph. A List of the Cretaceous Microzoa of the North of Ireland. *Proc. Belfast Field Club*, ser. ii. vol. i. pt. 1, App. iii. pp. 73–99, plates ii., iii.

Introductory note, pp. 73–75. List of localities from which Chalk Microzoa have been obtained, 76–80: these localities number 36. List of the Microzoa, 81–91: over 120 named species, and in all 151 different kinds. 6 new species of *Cythere* and 3 of Foraminifera (all Jones, MS.) are noticed, but not described; of these, *Cythere Wrightii* and *Ramulina* (n. gen.) *brachiata* are figured. Table showing the geographical distribution in the North of Ireland of the Cretaceous Microzoa, 92–99: with a column for each of the 36 localities. W. W.

Wright, Dr. Thomas. Monograph of the British Fossil Echinodermata of the Cretaceous Formations. Vol. i. part 7. On the Echinoconidæ, Echinonidæ, Echinobrissidæ, Echinolampadæ, and Spatangidæ, pp. 225–264, pls. liii.–lxii. *Pal. Soc.*

Defines the families Echinonidæ, Echinobrissidæ, Echinolampadæ, and Spatangidæ, and the genera *Holectypus*, *Pyrina*, *Catopygus*, *Clypeopygus*, *Trematopygus*, *Echinobrissus*, *Caratomus*, *Pygurus*, and *Hemiaster*. 16 species are described, of which the following are new—*Holectypus bistriatus*, *Catopygus Vectensis*, *Clypeopygus Fittoni*, and *Trematopygus Faringdonensis*. H. A. N.

——. On the occurrence of the Genus *Cotylederma* in the Middle Lias of Dorsetshire. *Geol. Mag.* dec. ii. vol. ii. pp. 505, 506.

Gives an account of previous researches as to *Cotylederma*, and notes the occurrence of an example of this genus in M. Lias between Lyme Regis and Charmouth. H. A. N.

Young, Prof. John, and John Young. On New Carboniferous Polyzoa. *Ann. Nat. Hist.* ser. 4, vol. xv. pp. 333–336, pls. ix., ix. *bis*.

Transfer *Ceriopora rhombifera*, Phill., to their new genus *Rhabdomeson*, and at the same time show that *C. similis*, Phill., and *C. interporosa*, Phill., are of a different nature, and may be left in the genus *Ceriopora*. Give a full description of *Rhabdomeson rhombiferum*, and describe the new species *Thamniscus*? *Rankini*, from the L. Carboniferous rocks of the West of Scotland. H. A. N.

Young, John. Remarks on an Arctic Shell-bed at Cartsdyke. *Proc. Nat. Hist. Soc. Glasg.* vol. ii. part 1.

Describes several species of Polyzoa obtained, one of which is referred to the genus *Idmonea*, not before found in any of the W. Scotland arctic beds. J. E. T.

Young, John. On some recently discovered Foraminifera from the Lanarkshire Coalfield. *Proc. Nat. Hist. Soc. Glasg.* vol. ii. part 1.

States that, previous to researches made by himself and others, no Foraminifera had been recorded from the Carboniferous rocks of W. Scotland. Gives a list of fresh species of Foraminifera from these rocks identified by H. B. Brady. J. E. T.

——. Notes on the *Bellerophon* and *Porcellia*, their classification, and their distribution in the Silurian and Carboniferous Strata of the West of Scotland. *Proc. Nat. Hist. Soc. Glasg.* vol. ii. part 1, p. 16.

States that these genera are now removed from the Cephalopoda, and placed among the Nucleobranchiate Gasteropoda. 14 species of *Bellerophon* have been found in the rocks of W. Scotland (4 in the Girvan Silurians, and 10 in Carboniferous Limestone near Glasgow). Only one species of *Porcellia* (*P. armata*) has been found, near Glasgow. J. E. T.

Zugmayer, H. Ueber Petrefaktenfünde aus dem Wiener Sandstein des Leopoldsberges bei Wien. [Fossils from Vienna Sandstone.] *Verh. k.-k. geol. Reichs.* pp. 292–294; woodcut.

The Vienna Sandstone yields few fossils. Nummulites found show that part of it belongs to the Eocene. There is now noted a large *Inoceramus*, 24 centims. long, from the Weinsch quarry, which will fix the age of another part; the species is named *I. Haueri.* E. B. T.

Report of the Geological Survey of Ohio. Vol. ii. Geology and Palæontology. Part ii. Palæontology, pp. viii. 436; many plates. 8vo. *Columbus.*

Contains the following memoirs:—**Prof. J. F. Newberry.** Descriptions of Fossil Fishes, see p. 287.

Prof. James Hall and R. P. Whitfield. Descriptions of Invertebrate Fossils, mainly from the Silurian System, pp. 65–179, pls. i.–ix., xi., xii. and pl. xiii. figs. 2–4. The first part deals with fossils from the Cincinnati Formation (Hudson River Group). The following new species are described:—*Lingula Covingtonensis*, *Lingulella* (*Dignomia?*) *Cincinnatiensis*, *Modiolopsis concentrica*, *M. Cincinnatiensis*, *Sedgwickia? divaricata*, *Cuneamya Miamiensis*, *C. scapha*, *Orthodesma recta*, *O. curvata*, *Orthoceras Duseri*, *O. Carleyi*, *O. turbidum*, *Gomphoceras eos*, *Beyrichia quadrilirata*, and *Plumulites* (*Turrilepas*) *Jamesi*. A number of previously recognized forms are also described and figured. The genus *Schizocrania* is proposed for certain radiately-striated orbiculoid Brachiopods; and two new genera of Lamellibranchs are founded under the names of *Orthodesma* and *Cuneamya*. The next part treats of fossils from the Clinton Formation. Besides previously known forms, the following new species are described—*Rhinopora frondosa*, *Stictopora magna*, *Clathropora Clintonensis*, *Phænopora* (*Ptilodictya*) *expansa*, *Cypricardites ferrugineum*, *Pleurotomaria inexpectans*, *Orthoceras Jamesi*, and *Illænus Daytonensis*. From the Niagara formation, in addition to previously recorded species, are described as new—*Inocaulis bella*, *Receptaculites Ohioensis*, *Platycrinus præmaturus*, *Saccocrinus ornatus*, *Pentremites subcylindrica*, *Monomerella Newberryi*, *Rhynchonella pisa*, *Pentamerus pergibbosus*, *Amphicœlia* (*Leptodomus*?) *costata*, *Subulites terebriformis*, *Straparollus Niagarensis*, *Tremanotus*? *trigonostoma*, *Orthoceras strix*, *Cyrtoceras myrice*, *C. Hertzeri*, *Phragmoceras parvum*, *P. ellipticum*, and *Encrinurus ornatus*. In the next part two new Crinoids are described—*Melocrinus* (*Ctenocrinus*) *Bainbridgensis*, from beds supposed to be equivalent to the Genesee Slates, and *Platycrinus Bedfordensis*, from strata supposed to correspond to the Chemung or Portage Group of New York. Finally, a number of Crinoids are described from the Waverly Group, the new species being *Platycrinus Richfieldensis* and *P. Lodensis*.

Prof. H. A. Nicholson. Description of the Corals of the Silurian and Devonian Systems, pp. 181–242, pls. xxi.–xxiii. The first part is a description of the corals of the Cincinnati Formation. In addition to a number of previously recorded forms, the following are described as new—*Chætetes subpulchellus*, *C. briareus*, *C. sigillarioides*, *C. Newberryi*, *C. petechialis*, *Constellaria polystomella*, and *Palæophyllum divaricans*. From the Clinton Formation six corals are described, of which *Acervularia Clintonensis* is new. From the Niagara Formation the only species recorded is *Favosites favosa*. From the Corniferous Limestone, in addition to species formerly known, there are described as new—*Favosites pleurodictyoides*, *F. invaginata*, *Zaphrentis Edwardsi*, *Z. Wortheni*, and *Z. multilamellata*.

Prof. H. A. Nicholson. Descriptions of Amorphozoa from the Silurian and Devonian Formations, pp. 243–255, pl. xxiv. Treats first of the genus *Stromatopora*, of which *S. ponderosa*, *S. substriatella*, and *S. nodulata* are described as new species from the Corniferous Limestone. *Syringostroma*, a new genus, or perhaps a subgenus, of *Stromatopora*, is described. The fossils of this group, though closely allied to *Stromatopora*, are distinguished by the density of their laminated tissue and the presence of horizontal tubes running parallel with the surface. Two species are described, *S. densa* and *S. columnaris*, both from the Corniferous Limestone. Lastly, the genus *Dictyostroma*, possibly also a subgenus of *Stromatopora*, is founded for the reception of a single species, *D. undulata*, from the Niagara Limestone of Kentucky.

——. Descriptions of Polyzoa from the Silurian Formation, pp. 257–268, pl. xxv. 5 species of *Ptilodictya*, 1 of *Ceramopora*, 3 of *Alecto*, and 1 of *Hippothoa*, from the Cincinnati Group of Ohio, are described; but all are previously recorded forms. A species of *Fenestella* is described from the Niagara Formation.

Prof. F. B. Meek. A Report on some of the Invertebrate Fossils of the Waverly Group and Coal Measures of Ohio, pp. 269–347, pls. x., xiii. (figs. 2–4 exclus.), and xiv.–xx. The first part deals with the fossils of the Waverly Group. In addition to a large number of previously recorded forms, the following new species and varieti described—*Fenestella multiporata*, M'Coy?, var. *Lodiensis*, *D* (*Orbiculoidea*?) *pleurites*, *Spirifer* (*Trigonotreta*) *striatiformis*, *Av* *pecten Winchelli*, *Palæoneilo Bedfordensis*, *Edmondia*? *tapesiformis*, *diomorpha subglobosa*, *Prothyris Meeki* (Winchell, MS.), and *Phil* (*Griffithides*?) *Lodiensis*. The second part deals with the fossils Coal Measures; and the following new forms are described in ad to others previously known—*Ptilodictya* (*Stictopora*) *seriata*, *Av* *pecten* (*Streblopteria*?) *Hertzeri*, *Placunopsis recticardinalis*, *Posidon* *fracta*, *Schizodus cuneatus*, *Pleurophorus tropidophorus*, *Soleno* *anodontoides*, and *Astartella Newberryi*.

Prof. E. D. Cope. Extinct Batrachia from the Coal Measure p. 274.

E. B. Andrews. Plants from the Coal Measures, see p. 334.

H.

See also:—

Ammon, L. von. Jurassic Fossils of Bavaria: p. 47.

Baily, W. H. Palæontological Notes: under **Du Noyer**, p. 12

Barrois, C. Lists of Greensand Fossils: p. 4.

Blake, Rev. J. F. Kimmeridge Clay Fossils: p. 5.

Bott, Arthur. Lists and Figures of Tertiary Fossils: p. 6.

Dewalque, Prof. G. Triassic Fossils, Luxembourg: p. 58.

Etheridge, R. Jurassic Fossils: under **Cross**, p. 9.

——. Table of Fossils, Burnley Coalfield: under **Hull**, p. 22.

——. Table of Fossils, Rutland: under **Judd**, p. 25.

——. Wealden Fossils: under **Topley**, p. 40.

Feistmantel, O. Indian Fossils: p. 136.

Fordham, H. G. U. Greensand Fossils: p. 13.

Fox, A. L. Fossils from Mt. Lebanon: p. 137.

Grainger, Rev. Dr. J. Lists of Post-Tertiary Fossils of Ire p. 15.

Grinnell, G. B. Palæontological Report, Dakota, under **Lu** p. 125.

Hantken, Max von. Eocene Fossils, S. Bakony: p. 69.

Heer, Prof. O. Miocene and Cretaceous Fauna of Greenland: p

Hicks, Henry. Arenig and Llandeilo Fossils: p. 18.

Jeffreys, Gwyn. Mollusca of the Bridlington Crag: p. 24.

Jukes-Browne, A. J. Cretaceous Fossils: p. 25.

Linnarsson, G. Trilobites of Nerike: p. 79.

Maurer, F. Rhenish Devonian Fossils: p. 83.

Morris, Prof. J. Boring Mollusca in Oolites: p. 31.

Nicholson, Prof. H. A. Fossils of the Guelph Limestone: p. 126.

Price, F. G. H. L. Greensand and Gault Fossils: p. 35.

Seguenza, Prof. G. S. Italian Pliocene Fossils: p. 97.

Tate, Prof. Ralph. Liassic Fossils, Radstock: p. 38.

Tawney, E. B. Liassic Fossils, Radstock: p. 39.

Vincent, —. *Scalaria tenuicosta*, n. sp.: under **Rutot**, p. 96.

Ward, J. Organic Remains of Coal Measures of N. Staffordshire: p. 295.

Whitfield, R. P. Cambrian and Cretaceous Fossils, Dakota: under **Ludlow**, p. 125.

3. *PLANTS.*

Andrews, E. B. Descriptions of Fossil Plants from the Coal-measures of Ohio. *Geological Survey of Ohio*, vol. ii. part 2, Palæontology, pp. 412–426, pls. xlvi.–liii.

Describes a group of plants found in a thin band of bituminous shale a little above the base of the Coal Measures in Perry County. The following new species are described and figured—*Megalopteris Harttii, M. minima, M. ovata, M. lata, Archæopteris stricta, Orthogoniopteris clara, O. Gilberti, Alethopteris Holdeni, A. Bunburyi, A. maxima, Hymenophyllites Ballantini, Eremopteris marginata, Lepidophloios Lesquereuxii, Lepidodendron Rushvillense, Asterophyllites ? minutus, A. erectifolius*, and *Cardiocarpon Newberryi*. The new genus *Orthogoniopteris* is founded for the reception of a group of ferns allied to *Tæniopteris*. The plants are in some respects intermediate between Devonian and Mesozoic types. H. A. N.

Bentham, Geo. Fossil Mimoseæ. Addendum to Revision of the Mimoseæ. *Trans. Linn. Soc.* vol. xxx. pp. 646, 647.

Considers there is no evidence of the presence of *Inga, Mimosa*, or *Phyllodineous Acacia* in Europe in Tertiary times. *Prosopis* is very doubtful. *Acacia, Entada*, and perhaps *Albizzia* are certain. W. C.

Braun, Al. Die Frage nach der Gymnospermie der Cycadeen. [Gymnospermous Character of the Cycadeæ.] *Monatsb. k. preuss. Ak. Wiss.* pp. 289–375.

The author notices some of the fossil forms which have a bearing on his investigation.

Brongniart, Ad. Sur la structure de l'ovule et de la graine des Cycadées, comparée à celle de diverses graines fossiles du terrain houiller. *Compt. Rend.* t. lxxxi. pp. 305–307.

Candolle, Alph. de. Existe-t-il dans la végétation actuelle des caractères généraux et distinctifs qui permettraient de la reconnaître en tous pays si elle devenait fossile? *Arch. Sci. Phys. Nat.* vol. liv. pp. 399–405.

The author has not been able to find any character which may be said to be peculiar to all recent vegetation, and points out that what have been called geological epochs in different parts of the world may have been only local assemblages of fossils, and that we should be equally justified in speaking of a *European epoch* and of a *United States epoch* as existing at the present day. E. T. N.

Castracane, Count. Diatomaceæ in the Carboniferous Epoch. *Trans. Acad. nuovi Lincei, Rome.* Noticed in *Micr. Journ.* vol. xiii. p. 243, also vol. xiv. p. 291. [The same as the paper noticed in the GEOLOGICAL RECORD for 1874, p. 331.]

The remains of several species of Diatomaceæ were discovered in coal. The specimens of coal, chiefly British, were reduced to a coarse powder, and burned in a small porcelain vessel in a glass tube, through which a stream of oxygen was passed. The ashes were heated with nitric and hydrochloric acids, with some chlorate of potash. A careful examination of the residue showed Diatomaceæ precisely agreeing with living forms. E. T. N.

Chaussat, Dr. J. B. Premières recherches sur la flore fossile des bassins houillers de la Creuse. [Fossil Flora of the Coal-basins of the Creuse.] 18 pp.

Chiappori, Agostino. Della vegetazione attuale e pleistocenica a Torriglia. [Recent and Pleistocene Flora of Torriglia.] *Genoa.*

Compter, Gust. Ein Beitrag zur fossilen Keuperflora. *Nova Acta Ac. Cæs. Leop. Nat. Cur.* vol. xxxvii. pp. 1–10; 2 plates.

11 species enumerated, and a new species, *Cycadites apoldensis*, described and figured.

Crépin, Fr. Note sur le *Pecopteris odontopteroides*, Morris. *Bull. Ac. Roy. Belg.* vol. xxxix. pp. 258–263; plate.

This fern is referred to *Odontopteris*, and is probably the same as *O. alpina*; but, if it should be different, the author suggests the name *O. Morrisii.* G. A. L.

——. Observations sur quelques plantes fossiles des dépôts dévoniens rapportés par Dumont à l'étage quartzoschisteux inférieur de son système Eifelien. *Bull. Soc. R. Bot. Belg.* vol. xiv. pp. 214–230; 4 plates.

A review of some fossils found in the Devonian rocks of Belgium, with more lengthened descriptions of already described species.

Crie, Louis. Coup d'œil sur la Flore tertiaire des environs du Mans. [Tertiary Flora of Mans.] *Bull. Soc. Linn. Norm.* ser. 2, t, ix. pp. 378–383.

Dames, W. Ueber Eophyton Linneanum. *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. pp. 244, 245.

A specimen of this fossil from West Gothland was exhibited, and the views of Torell, Linnarsson, and Nathorst regarding it expounded.

Dawson, Principal J. W. Carboniferous Conifers. *Amer. Journ.* ser. 3, vol. x. p. 301.

Invitation for help in obtaining specimens of Palæozoic Conifers in the United States.

Etheridge, R., Jun. Note on the Geological Range of *Adiant* *Lindseæformis*. *Trans. Bot. Soc. Edin.* p. 229.

Observed from the Wardie shale of the L. Carboniferous series, a the Calderwood section of the L. Carboniferous Limestone series.

Ettingshausen, Dr. C. Fr. von. Ueber die genetische Gliederung Cap-Flora. [Genetic Membership of the Cape Flora.] *Sitz. Ak. Wiss. Wien, math.-nat. Cl.* Abth. 1, Bd. lxxi. pp. 112, 1 613–638.

The Tertiaries of Tyrol, Switzerland, S. France, &c. have yielc S. African genera (termed a "by-element" of the European Terti flora), but which have mostly disappeared from Europe. The Afric element was once widespread, and in Europe arose from differentiati of Cretaceous plants; during the Pliocene it became crowded out he but held and flourished at the Cape. Lists of genera peculiar to t recent Cape flora are given; also of other S. African genera ("b elements") which characterize various other parts of the world; t proportions of these flora-members are set down in tabular form.
E. B.

——. Die genetische Gliederung der Flora Australiens. [Gene Membership of the Australian Flora.] *Sitz. k. Ak. Wiss. Wi* *math.-nat.-Cl.* Abth. 1, Bd. lxx. pp. 542–550.

Extract from the 'Denkschriften.' Lists of genera are given, whi show the presence in Australia of the E. Indian, Oceanic, America European, and S. African flora-members respectively; but these a probably in different stages of development, though palæontologi data to prove it are at present wanting. E. B.

Feistmantel, Dr. O. Versteinerungen der böhmischen Kohlen-A lagerungen. Abth. iii. [Fossils of Bohemian Coal Measure *Palæontographica*, Bd. xxiii. Lief. 4–6, pp. 175–222, tab. 30–49

A continuation [see GEOLOGICAL RECORD for 1874, p. 334]. Confin to the Lycopodiaceæ. Two species are referred to *Lycopodium*, v *L. selaginoides* and a new species *L. carbonaceum*; the forms belonging *Lepidodendron* are grouped under two species: *Halonia* and *Berger* are peculiar states of this genus. Specimens are figured showing t connexion between *Halonia* and *Lepidophloios*. *Lomatophloios* is al merged in this genus. *Flabellaria Sternbergi* (Ett.) is renamed *Lepid* *phyllum horridum*. *Sagenaria* is retained, of which *Aspidiaria* is form with the scale; five species are noted, the first being *Lepidostr* *bus*. *Knorria* also is not of generic rank; one species is noted. E. B.

——. Fossile Pflanzen aus Indien. [Fossil Plants from Indi *Verh. k.-k. geol. Reichs.* pp. 187–194.

A revision of the plates of the Fossil Flora of the Rajmahal seri by Oldham and Morris, which flora the author believes to be Liassic.

Feistmantel, Dr. O. Weitere Bemerkungen über fossile Pflanzen aus Indien. *Verh. k.-k. geol. Reichs.* pp. 252–261.

Contains a revision of the species of plants from the Cutch series (Oolitic), and of the Rajmahal series of the Rajmahal Hills and Godavery (Lias). E. B. T.

——. Ueber das Vorkommen von *Nöggerathia foliosa*, Stbg., in dem Steinkohlengebirge von Oberschlesien. [Occurrence of *Noeggerathia foliosa* in the Carboniferous rocks of Silesia.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. pp. 70–82, pl. v.; see also GEOLOGICAL RECORD for 1874, p. 334.

Specimens of *N. foliosa* and *N. intermedia* are figured and described.

——. Ueber Steinkohlenpflanzen aus Portugal. *Lotos,* Oct.

A review of the coal-plants from Portugal in the mineralogical Museum of the University of Breslau.

Firket, Ad. Sur des fossiles végétaux de l'argile plastique d'Andenne. [Fossil Plants from the Plastic Clay of Andenne.] *Ann. Soc. Géol. Belg.* t. ii. *Bulletin,* pp. xlviii–l; with discussion.

The fossils, consisting of a stem and a cone in excellent preservation, were found in a clay-pit at Francesse, between Geaves and Sorée, S. of Andenne. The age of the clay is doubtful. Prof. Dewalque thinks that the cone is that of the common pine. G. A. L.

Geinitz, E. [New Sections of L. Permian, Saxony.] See p. 66.

Some plants already known from these shales are described in the Palæontological part of the paper. The name *Jordania Moravica* is given to a fruit of unknown affinities, described as *Carpolithes* by Helmhacker. F. W. F.

Geinitz, [Prof.] H. B. Ueber *Knorria Benedeniana,* Gein., aus der belgischen Steinkohlenformation. [*Knorria Benedeniana* from the Belgian Coal Measures.] *N. Jahrb.* pp. 687–689, pl. xv.

The fragment, the only specimen known, is figured.

Geyler, H. Th. Ueber fossile Pflanzen aus Borneo. *Palæontographica.*

Gilkinet, A. Sur quelques Plantes fossiles de l'étage des Psammites du Condroz. [Fossil Plants of the Psammites of Condroz.] *Bull. Ac. Roy. Belg.* t. xxxix. pp. 384–398, 3 pls.

Inquires into the systematic position of *Psilophyton,* and considers that some forms are fragments of ferns. *P. condrusorum,* Crepin, is placed in *Sphenopteris,* and figured and described as *S. condrusorum,* Gilk. W. C.

——. Sur quelques Plantes fossiles de l'étage du Poudingue de Burnot. *Bull. Ac. Roy. Belg.* t. xl. pp. 139–145, 3 pls.

Two plants already named by Coemans are described at length and figured. *Filicites lepidorachis* is referred to *Lepidodendron,* and named *L. Burnotense.* W. C.

Grieve, John. Remarks on Fossils from the Leaf Beds of
Proc. Nat. Hist. Soc. Glasg. vol. ii. part 1.

Describes the matrix of the leaf-bed, and microscopical examina
for Diatomaceæ and Entomostraca, none of which were found.

Grossart, G. W. On a Tract of Vertical Trees in Carbonif
Strata. *Coll. Guard.* vol. xxix. p. 419. Abstract of paper
to Geol. Soc. Glasgow.

A notice of eight erect trees in the lower Drumgray coal, pari
Shotts.

Harpe, Dr. Ph. De la. Plantes fossiles trouvées dans la mol
marine, &c. près de Lausanne. [Miocene Plants from Lausa
Bull. Soc. Vaud. Sci. Nat. vol. xiii. pp. 692–694.

From Epalinges in the marine molasse (Helvetian) are note
species of Phanerogams. From the Calvaire, grey molasse (Lang
beds), 20 species. Their distribution in the Swiss Miocene is show
E.

Heer, O. Ueber die miocenen Kastanienbäume. [Miocene Cl
nut-trees.] *Verh. k.-k. geol. Reichs.* pp. 93–95.

This genus, originally named from leaves, was proved to be prese
the Miocene by the fruit and spiny fruit-capsules found in Greenl
Alaska, &c. Critical notes on various species are included. E.

Johnson, Dr. C. On the Preparation of Sections of Coal. *Cinci*
Medical News. Noticed in *Micr. Journ.* vol. xiv. p. 148.

M'Nab, Prof. William R. On Calamites and their Relatio
Equisetums, or "Horsetails," of the present day. *Journ. R. D*
Soc. vol. vi. no. 43, pp. 471–474.

Describes the structure of the Equisetums, and shows the re
blance between these and Calamites. The great difficulty in compa
the stems of the two lies in the structure of the fibro-vascular bun
A description of these is given, showing the points of comparison.
E.

Nathorst, A. G. Fossila växter från den stenkolsförande form
nen vid Pålsjö i Skåne. [Fossil Plants from the Coal-bea
Beds of Pålsjö, Scania.] *Geol. Fören. Stockholm Förh.* Bd. ii.
373-392.

The new species described are *Hysterites Friesi*, *Rhizomop*
Schenki, *Cladophlebis nebbensis*, Brongn. (emend.), *Cl. Heeri*, *Thiun*
dia Nordenskiöldi, *Anomozamites gracilis*, *Podozamites ovalis*, *Cyca*
longifolius, *Schizolepis Follini*, *Swedenborgia* (n. gen.) *cryptomeri*
Pinites Lundgreni, *P. Nilssoni*, *Camptophyllum* (n. gen.) *Schimperi*.
G. A

——. Om en cycadécotte från den rätiska formationens lagu
Tinkarp i Skåne. [Rhætic Cycas, Scania.] *Œfv. K. Vet.-Ak*
Förh. no. 10, pp. 25–31, pl. xiii.

Describes a slender cone of a Cycad with distant fruit-scales wh
are bifurcate at the apex, and names it *Zamiostrobus stenorrhachis*.

Renault, B. Études sur le *Sigillaria spinulosa* et sur le genre *Myelopteris. Mém. Ac. Sci. Paris*, pp. 1-23, 1-27; 12 plates.

The structure of the stem of *Sigillaria* is examined; and the author concludes that this plant has the structure of a Cycadean stem; the fruit is needed before its position can be definitely fixed. The internal structure of *Myelopteris* (*Medullosa*, Cotta) is believed to indicate a genus of ferns belonging to the family of *Marattiaceæ*, the type of which has been lost, though it was of great importance during the Carboniferous period. W. C.

——. Recherches sur les Végétaux silicifiés d'Autun et de Saint-Etienne. Étude du genre *Botryopteris. Ann. Sci. Nat.* sér. 6, vol. i. pp. 220-240.

Describes the structure of the stems, roots, petioles, and fruits of ferns referred to two species, *B. forensis* and *B. dubius*, and considers them intermediate between true ferns and *Ophioglosseæ*. W. C.

Saporta, Count G. de. Paléontologie Française. Vol. ii. pp. 289-362, plates 50-58.

Completes the Cycadeæ with the second volume. The following new species are described and figured:—*Clathropodium Trigeri, C. Sarlatense, C. foratum, Fittonia insignis, F. Rigauxii*, and *Cycadeomyelon hettangense*. W. C.

——. Sur la découverte de deux types nouveaux de Conifères dans les Schistes permiens de Lodève (Hérault). [Two New Types of Coniferæ from the Permian Shales of Lodève.] *Compt. Rend.* vol. lxxx. pp. 1017-1020. Note by **M. Brongniart**, pp. 1020-1022.

Refers the two leaf forms discovered to Coniferæ near to *Gingko* (*Salisburia*), proposes the names *Gingkophyllum Grasseti* and *Trichopitys heteromorpha*, and compares them with already described forms. G. A. L.

——. Sur le *Pinus Corneti*. [*Pinus Corneti.*] *Bull. Soc. Géol. France*, 3 sér. t. ii. pp. 593, 594.

This fossil would be more accurately named *Cedrus Corneti*. Compares it with the larger *Pinites Leckenbyi*, Carr.

Saporta, Count G. de, and M. A. F. Marion. Recherches sur les Végétaux Fossiles de Meximieux (Ain). Précédées d'une introduction stratigraphique par **M. A. Falsan.** [See p. 62.] *Arch. Mus. Lyon*, t. i. liv. 4, pp. 131-184; 6 plates.

The first section upon the Fossil Flora enters into a consideration of the elements of which the Tertiary vegetation consisted towards the end of the Miocene period. E. T. N.

Schenk, Dr. A. Zur Flora der nordwestdeutschen Wealdenformation. [Weald Flora of N.W. Germany.] *Palæontographica*, Bd. xxiii. Lief. 4, pp. 157-163, pls. 26-29.

Notice of some additional materials since his memoir in Bd. xix. *Lomatopteris Schimperi* is described, belonging to a genus hitherto known only from the Lias. E. B. T.

Schenk, Dr. A. Ueber einige Pflanzenreste aus der Gosauformation Nordtirols. [Plant Remains from the Gosau Beds.] *Palæontographica*, Bd. xxiii. Lief. 4, pp. 164–171, pl. 29.

These beds have yielded two Sequoias and one Ficus, identical with those from the Cenomanian of Niederschöna; the remainder are new species, viz. *Equisetum Heeri*, *Sphenopteris Pichleri*, *Cyparissidium cretaceum*, *C. Suessii*, *Proteoides affinis*, *P. Ettingshauseni*, *Leguminosites ovatus*, and *L. lanceolatus*. E. B. T.

Stur, D. Die Culm-Flora des mährisch-schlesischen Dachschiefers. *Abh. k.-k. geol. Reichs.* Bd. viii. pp. 1–106; 17 pls.

42 species are described and figured, of which 24 are new (see list, pp. 356, 357). The species are chiefly ferns; and in this group are remains referred to the existing genus *Todea*. *Rhacopteris* is referred to *Ophioglossaceæ*; the remainder belong to the genera *Sphenopteris*, *Rhodea*, *Archæopteris*, &c. Details are given of the foliage and fruit of *Archæocalamites radiatus*. A species of *Walchia* and one of *Pinites* are described. W. C.

——. Zur Kenntniss der Steinkohlenflora der bairischen Pfalz. [Coal Flora of the Palatinate.] *Verh. k.-k. geol. Reichs.* pp. 155–157.

An enumeration of plants from various beds in this district, believed to be of the same age as the Saarbrück beds.

Visiani, Roberto de. Di alcuni generi di piante fossili. [On some Genera of Fossil Plants.] *Venice.*

Warner, F. T. On a Specimen of Fossil Wood from the Winchester Chalk. *Journ. Winch. Sci. Soc.* vol. i. part iii. pp. 152–155.

The wood is in a large nodule of flint, bears no trace of bark, and seems to be a waterworn fragment. It is silicified, the tissues being well preserved; and there are a few tubular holes filled with crystallized silex. Under the microscope the fibres show the glandular structure, which, with the absence of ducts, is characteristic of conifers; and, from a comparison of sections with those of recent wood, it is clear that the fossil is coniferous. W. W.

Waters, A. M. Notes on Fossil *Lithothamnia*. *Mem. Lit. Phil. Soc. Manch.* vol. xiii. p. 68.

Refers to the abundance of these fossils in some of the Tertiary rocks of Europe, and believes that a sixth of the whole Tertiary rocks of the Eastern Alps is composed of *Lithothamnia*. W. C.

Williamson, Prof. W. C. On the Organization of the Fossil Plants of the Coal Measures. Part vii. *Myelopteris*, *Psaronius*, and *Kaloxylon*. *Proc. R. Soc.* vol. xxiii. pp. 452–455.

Agrees with Renault that *Myelopteris* is a Marattiaceous fern; *Psaronius Renaultii* is the root of a tree fern. *Kaloxylon Hookeri* is a slender stem belonging, with little doubt, to a Lycopodiaceous plant. W. C.

See also :—

Grieve, D. Carboniferous Plants: p. 15.

Heer, Prof. O. Miocene and Cretaceous Floras, Greenland: under "Manual of . . . Greenland, &c.," p. 111.

M'Coy. Palæontology of Victoria, p. 314.

Nicholson, Prof. H. A., and W. H. Ellis. Silicified Wood, Rocky Mountains: p. 126.

Sorby, H. C. Remains of Fossil Forest, Coal Measures, Wadsley: p. 37.

Stöhr, E. Plants from Sulphur-deposits, Sicily: p. 100.

Stur, D. Reise-Skizzen. Notes of Fossil Plants: p. 101.

Ward, J. Organic Remains of Coal Measures of N. Staffordshire: p. 295.

4. *INDEX OF NEW SPECIES.*

Owing to the fact that palæontological memoirs may contain descri of animals belonging to different zoological groups, no zoological arrangem papers can be adopted, save at the expense of great repetition. To me difficulty the following analytical index has been made, in the hope that i serve as a key to the abstracts.

The genera and species are arranged in alphabetical order under their gical groups. A worker, therefore, in any branch of Palæontology is enab refer to the papers in which he is interested, and to form a notion of th coveries of the year in that branch.

Names of new genera or subgenera are marked with an asterisk. The nu are those of the pages, where a reference to the species will be found; " Add "Suppl." respectively refer to ADDENDA and SUPPLEMENT FOR 1874.

MAMMALIA.

*Agabelus porcatus, Cope, Miocene, Add.
Agriochœrus pumilus, Marsh, Miocene, 285.
Ambloctonus sinosus, Cope, Eocene, 275.
Anchippus brevidens, Marsh, Pliocene, Suppl.
Anchitherium anceps and celer, Marsh, Miocene, Suppl.
Ancylotherium priscum, Gaudry, Tertiary, 279.
Anisacodon montanus, Marsh, Miocene, 285.
Antiacodon crassus and mentalis, Cope, Eocene, 275.
Aphelops jemezanus, Cope, Pliocene, 276.
Auchenia hesterna, Leidy, Quaternary, 285.
Bathmodon cuspidatus, Cope, Eocene, 275.
—— elephantopus, Cope, Eocene, 277 and Suppl.
—— latidens, Cope, Eocene, 275.
—— lomas, molestus, and simus, Cope, Eocene, Suppl.
Brachydiastematherium transylvanicum, Bockh and Maty, Eocene, 273.
*Calamodon arcamœnus, novomehicanus, and simplex, Cope, Eocene, Suppl.
Canis ursinus, Cope, Pliocene, 275.
Cathartes umbrosus, Cope, Pliocene, Suppl.
Cosoryx ramosus and teres, Cope, Pliocene, Suppl.
Cuon Edwardsianus and europæus, Bourguignat, Quaternary, 273.
Delphinus tetragorhinus, Delfortrie, Miocene, 277.
*Diacodon alticuspis and celatus, Cope, Eocene, 275.
*Diceratium advenum, Marsh, Eocene ?, 285.
—— armatum and nanum, Marsh, Miocene, 285.
*Diplacodon elatus, Marsh, U. Eocene, 285.
*Ectoganus gloriformis, Cope, Eocene, Suppl.
Eotherium ægyptiacum, Owen, Eocene, 288.
*Eporeodon occidentalis, Marsh, Tertiary, 285.
Esthonyx acer, bisul burmeisteri, and ı culus, Cope, Eoce Suppl.
Hesperomys loxodo Cope, Pliocene, S
Hippotherium calar rium, Cope, Pliocen
Hyrachus singularis Cope, Eocene, 275
*Laopithecus robust Marsh, Miocene, :
*Lemuravus distans, Marsh, Eocene, 2
Limnocyon protenu Cope, Eocene, Su
*Lycorus nemesianus Bourguignat, Qua nary, 273.
Machairodus perarn tus, Gervais, Tert 280.
Martes nambianus, Pliocene, Suppl.
Mastodon productus Cope, Pliocene, 2
*Meniscotherium cha mense, Cope, Eoc Suppl.
Mephitis frontata, C Cave, 277.
*Mesohippus celer, M Miocene, 285.

*Miohippus annectens, Marsh, Miocene, Suppl.
*Opisthotomus astutus and flagrans, Cope, Eocene, 275.
Orohippus angustidens and cuspidatus, Cope, Eocene, 275.
—— major, Marsh, Eocene, Suppl.
—— tapirinus, Cope, Eocene, 275.
—— uintensis, Marsh, Eocene, 285.
*Oxyæna forcipata, lupina, and morsitans, Cope, Eocene, Suppl.
*Pachyæna ossifraga, Cope, Eocene, Suppl.
Palæotherium eocænus, Gervais, Eocene, 280.
*Panolax sanctæfidei, Cope, Pliocene, Suppl.
Pantolestes chacensis, Cope, Eocene, 275.
Pelicodus angulatus and frugivorus, Cope, Eocene, 275.
Phenacodus omnivorus, primævus, and sulcatus, Cope, Eocene, Suppl.
*Pliauchenia Humphresiana and vulcanorum, Cope, Pliocene, 276.
*Pliohippus pernix and robustus, Marsh, Pliocene, Suppl.
Protohippus avus, Marsh, Pliocene, Suppl.
Prototomus insidiosus and Jarrovii, Cope, Eocene, Suppl.
—— multicuspis, secundarius, and strenuus, Cope, Eocene, 275.
—— viverrinus, Cope, Eocene, Suppl.
*Sarcolemur, Cope, = Antiacodon (part), 275.
*Thinohyus lentus and socialis, Marsh, Miocene, 285.
Tigris imperialis, Leidy, Quaternary, 285.
Tillotherium fodiens, Marsh, Eocene, 285.

AVES.

Anas Finschi, v. Beneden, Cave-deposit, 272.
Pelagornis Delfortii, Milne-Edwards, Miocene, 287.
Procellaria antiqua and Aquitanica, Milne-Edwards, Miocene, 287.
Sula pygmæa, Milne-Edwards, Miocene, 287.

REPTILIA AND AMPHIBIA.

Alligator chamensis, Cope, Eocene, Suppl.
Anthracosaurus raniceps, Goldenberg, Carboniferous, 281.
Arctosaurus Osborni, Adams, 271.
Bothriospondylus elongatus and magnus, Owen, Wealden, 288.
—— robustus and suffossus, Owen, Jurassic, 288.
Ceraterpeton puncto-lineatum, Cope, 275.
—— tenuicorne, Cope, Carboniferous, 274.
Cetiosaurus Rigauxi, Sauvage, Jurassic, Suppl.
Chalicotherium modicum, Gaudry, Miocene, 279.
*Cionodon stenopsis, Cope, Cretaceous, 274.
*Clepsydrops Collettii, Cope, 276.
*Cocytinus gyrinoides, Cope, Carboniferous, 274.
*Compsemys ogmius, Cope, Cretaceous, 274.
*Cricotus heteroclitus, Cope, 276.
Crocodilus grypus and Wheeleri, Cope, Eocene, 275.
Cryptosaurus eumerus, Seeley, Oxfordian, 292.
Dermatemys costellatus, Cope, Eocene, 275.
Diplocynodus sphenops, Cope, Eocene, 275.
*Hæmatosaurus lanceolatus, Sauvage, Jurassic, Suppl.
*Hyphasma lævis, Cope, Carboniferous, 274, 275.
Machimosaurus bathonicus, ferox, interruptus, and Rigauxi, Sauvage, Jurassic, Suppl.
Metriorhynchus littoreus, Sauvage, Jurassic, Suppl.
Molgophis brevicostatus and macrurus, Cope, Carboniferous, 274.
Morinosaurus typus, Sauvage, Jurassic, Suppl.
*Osteopygis erosus, Cope, Cretaceous, 274.
*Plastomenus coalescens and costatus, Cope, Cretaceous, 274.
—— lachrymalis, Cope, Eocene, Suppl.
*Pleuroptyx clavatus, Cope, Carboniferous, 274, 275.
Priodontognathus Phillipsii, Seeley, 292.
Prototriton petrolei, Gaudry, Carboniferous, 279.
Ptyonius nummifer, Cope, Carboniferous, 274.
Sauropleura Newberryi, Cope, Carboniferous, 274.
Steneosaurus Bouchardi, morinicus, and rudis, Sauvage, Jurassic, Suppl.
Testudo Klettiana, Cope, Pliocene, 277.
—— præceps, Haberlandt, Miocene, 281.

Testudo undata, Cope, Pliocene, 277.
*Toxochelys serrifer, Cope, Cretaceous, 274.
*Thyrsidium fascicularia, Cope, Carboniferous, 274.
Tuditanus mordax, Co Carboniferous, 274.
Typothorax coccinarum Cope, 132.

PISCES.

*Acanthaspis armatus, Newberry, Devonian, 287.
*Acantholepis pustulosus, Newberry, Devonian, 287.
*Acondylacanthus æquicostatus and gracilis, St. John and Worthen, Carboniferous, 292.
*Agassizodus scitulus and Virginianus, St. John and Worthen, Carboniferous, 292.
Amia dictyocephala and scutata, Cope, Tertiary, 276.
Amyzon fusiforme and pandatum, Cope, Tertiary, 276.
Anaclitacanthus semicostatus, St. John and Worthen, Carboniferous, 292.
Antliodus gracilis and perovalis, St. John and Worthen, Carboniferous, 292.
Asteroptychius ? bellulus, Keokuk, St. Ludovici, ? tenuis, and ? vetustus, St. John and Worthen, Carboniferous, 292.
*Asterosteus stenocephalus, Newberry, Devonian, 287.
Astracanthus tetrastichodon, Fricke, Jurassic, 279.
*Batacanthus baculiformis, St. John and Worthen, Carboniferous, 292.
*Bathycheilodus M'Isaacsii, St. John and Worthen, Devonian, 292.
*Bryactinus amorphus, Cope, Cretaceous, 274.
Byssacanthus Gosseleti, Barrois, U. Devonian, 272
*Bythiacanthus Van Hornei, St. John and Worthen, Carboniferous, 292.
*Calopodus apicalis, St. John and Worthen, Carboniferous, 292.
Ceratodus Vinslovii, Cope, 276.
*Cholodus inæqualis, St. John and Worthen, Carboniferous, 292.
Chomatodus comptus, inconstans, incrassatus, and parallelus, St. John and Worthen, Carboniferous, 292.
Chrysophrys Lawleyi, Gervais, Pliocene, 281.
Cladodus alternatus, bellifer, and carinatus, St. John and Worthen, Carboniferous, 292.
—— concinnus, Newberry, Carboniferous, 287.
—— eccentricus, euglypheus, exiguus, exilis, Fulleri, and gomphoides, St. John & Worthen, Carboniferous, 292.
—— Hertzeri, Newberry, Carboniferous, 287.
—— intercostatus and pandatus, St. John and Worthen, Carboniferous, 292.
—— parvulus and Patersoni, Newberry, Carboniferous, 287.
—— prænuntius and raricostatus, St. John and Worthen, Carboniferous, 292.
—— Romingeri, Newberry, Carboniferous, 287.
—— Springeri, St. John and Worthen, Carboniferous, 292.
—— subulatus, Newberry, Carboniferous, 287.
—— succinctus, Van Hornei, and Wachsmuthi, St. John and Worthen, Carboniferous, 292.
Coccosteus occidentalis, Newberry, Devonian, 287.
Ctenacanthus Burlingtonensis and excavat St. John and Worth Carboniferous, 292.
—— furcicarinatus, Ne berry, Carboniferous, 2
—— gemmatus, gradocostus, and Keokuk, John and Worthen, Carboniferous, 292.
—— parvulus, Newber Carboniferous, 287.
—— pugiunculus, sculp tus, similis, speciosus, spectabilis, and varia St. John and Worthe Carboniferous, 292.
Ctenodus Ohioensis, Cope, Carboniferous, 274.
—— reticulatus and serratus, Newberry, Carboniferous, 287.
Ctenopetalus bellulus, limatulus, medius, oc dentalis, and vinosus, St. John and Worthe Carboniferous, 292.
Ctenoptychius pertenui and Stevensoni, St. John and Worthen, Carboniferous, 292.
Dactylodus concavus, e cavatus, and minimu St. John and Worthe Carboniferous, 292.
*Desmiodus costelliferus ? flabellum, ligoniformis, and tumidus, St. John and Worthen, Carboniferous, 292.
Dinichthys Terelli, Newberry, Devonian, 287.
*Diphrissa latidens, Cop Cretaceous, 274.
Dipterus Sherwoodi, Newberry, Carboniferous, 287.

Drepanacanthus reversus, St. John and Worthen, Carboniferous, 292.
*Enchodus dolichus, oxytomus, and tetrœcus, Cope, Cretaceous, 274.
Erismacanthus M'Coyanus, St. John and Worthen, Carboniferous, 292.
*Fissodus bifidus and tricuspidatus, St. John and Worthen, Carboniferous, 292.
*Gampsacanthus ? latus, squamosus, and typus, St. John and Worthen, Carboniferous, 292.
*Geisacanthus bullatus and stellatus, St. John and Worthen, Carboniferous, 292.
*Glymmatacanthus Irishii, St. John and Worthen, Carboniferous, 292.
Gyrodus ornatissimus, Blake, U. Jurassic, 5.
Harpacodus compactus and occidentalis, St. John and Worthen, Carboniferous, 292.
*Heliodus Lesleyi, Newberry, Carboniferous, 287.
*Hybocladodus intermedius, nitidus, plicatilis, and tenuicostatus, St. John and Worthen, Carboniferous, 292.
Hybodus crassus, Fricke, Jurassic, 279.
Ichthyocopros pupæformis, Goldenberg, Carboniferous, 281.
Ischyodus Eocænus, fecundus, incrassatus, longirostris, stenobryus, and tripartitus, Cope, Cretaceous, 274.
Isotænia neocæsariensis, Cope, Cretaceous, 274.
*Lambdodus calceolus, costatus, hamulus, reflexus, and transversus, St. John and Worthen, Carboniferous, 292.
Lamna carbonaria, var. minor, Goldenberg, Carboniferous, 281.
Lamna macrorhiza and Mudgei, Cope, Cretaceous, 274.
*Lecracanthus unguiculus, St. John and Worthen, Carboniferous, 292.
*Leiodus calcaratus, St. John and Worthen, Carboniferous, 292.
Lepidotus affinis, Fricke, Jurassic, 279.
—— Mohimonti, Winkler, U. Lias, Suppl.
*Leptomylus forfex, Cope, Cretaceous, 274.
*Lisgodus curtus, selluliformis, and serratus, St. John and Worthen, Carboniferous, 292.
Listracanthus Hildrethi, Newberry, Carboniferous, 287.
*Mesodmodus explanatus, exsculptus, and ornatus, St. John and Worthen, Carboniferous, 292.
Mesodon pusillus and Wittei, Fricke, Jurassic, 279.
Myliobatis superbus, Hantken, Eocene, 69.
Oracanthus consimilis and obliquus, St. John and Worthen, Carboniferous, 292.
Orodus Alleni, carinatus, dædaleus, decussatus, fastigiatus, major, neglectus, parallelus, parvulus, raricostatus, and turgidus, St. John and Worthen, Carboniferous, 292.
—— variabilis, Newberry, Carboniferous, 287.
—— Whitei, St. John and Worthen, Carboniferous, 292.
Orthacanthus gracilis, Newberry, Carboniferous, 287.
*Pelecopterus chirurgus, Cope, Cretaceous, 274.
Peltodus(?) plicomphalus, quadratus, and transversus, St. John and Worthen, Carboniferous, 292.
Peplorhina anthracina, Cope, Carboniferous, 274.
*Periplectrodus compressus, expansus, and Warreni, St. John and Worthen, Carboniferous, 292.
Petalodus hybridus, St. John and Worthen, Carboniferous, 292.
—— (?) lobatus, Etheridge, Jun., Carboniferous, 278.
—— proximus, St. John and Worthen, Carboniferous, 292.
Petalorhynchus(?) Benniei, Etheridge, Jun., Carboniferous, 278.
—— distortus, pseudosagittatus, and spathulatus, St. John and Worthen, Carboniferous, 292.
Phasganodus Gentryi, Cope, Miocene, Add.
*Phœbodus Sophiæ, St. John and Worthen, Devonian, 292.
Physonemus Altonensis, carinatus, Chesterensis, depressus, parvulus, and proclivus, St. John and Worthen, Carboniferous, 292.
*Platyodus lineatus, Newberry, Carboniferous, 287.
*Pnigeacanthus deltoides, St. John and Worthen, Carboniferous, 292.
Polyrhizodus amplus and carbonarius, St. John and Worthen, Carboniferous, 292.
—— modestus, Newberry, Carboniferous, 287.
—— nanus, Piasaensis, and Williamsi, St. John and Worthen, Carboniferous, 292.
*Portheus arcuatus, Cope, Cretaceous, 274.
Pristicladodus Springeri, St. John and Worthen, Carboniferous, 292.
Pristodus ? acuminatus, St. John and Worthen, Carboniferous, 292.

Psephodus ? reticulatus, St. John and Worthen, Carboniferous, 292.
Ptychodus papillosus, Cope, Cretaceous, 274.
Pycnodus heterodon, Didelot, Neocomian, 278.
—— quincuncialis, Blake, U. Jurassic, 5.
Sphyrænodus silovianus, Cope, Miocene, Add.
*Stemmatodus bicristatus, bifurcatus, cheiriformis, compactus, Keokuk, simplex, and symmetricus, St. John and Worthen, Carboniferous, 292.
*Tanaodus bellicinctus, depressus, grossiplicatus, polymorphus, prænuntius, pumilus, sculptus, and sublunatus, St. John and Worthen, Carboniferous, 292.
*Thrimacodus nanus, S
John and Worthen,
Carboniferous, 292.
*Venustodus argutus,
Leidyi, robustus, ten
cristatus, and varia-
bilis, St. John and
Worthen, Carboniferous, 292.
Xystracanthus acinaci
formis and mirabili
St. John and Worth
Carboniferous, 292.

MOLLUSCA.

CEPHALOPODA.

Amaltheus Schaumburgi, Waagen, Jurassic, 327.
Ammonites acutus, Tate, Lias, 323.
—— Arausionensis and Gardonicus, Hébert and Munier-Chalmas, Cretaceous, 310.
—— hominalis, Lemani, Lucingæ, and Navillei, Favre, Jurassic, 306.
—— (Ceratites) fastigiatus, Credner, U. Cretaceous, 301.
—— (——) Pragsensis, Loretz, Trias, 313.
—— Pralairei, Favre, Jurassic, 306.
—— Terquemi, Friren, Jurassic, 307.
—— Salazacensis and Vallonnensis, Hébert and Munier-Chalmas, Cretaceous, 310.
—— Volgensis, Vischniakoff, Jurassic, 327.
Aspidoceras binodiferum, diversiforme, iphiceroides, monacanthum, ponderosum, sparsispinum, subdistractum, tenuispinatum,& Wynnei, Waagen, Jurassic, 327.
Belemnites Voironensis, Favre, Jurassic, 306.
*Buchiceras serratum, Hyatt, Cretaceous, 312.
Caloceras Ortoni, Hyatt, Cretaceous, 312.
Cyrtoceras Carrollensis, Worthen, Silurian, 328.
—— Hertzeri and myrice, Hall and Whitfield, Silurian, 330.
Gomphoceras eos, Hall and Whitfield, Silurian, 330.
Haploceras deplanatum and propinquum, Waagen, Jurassic, 328.
Harpoceras crassifalcatum, dynastes, lairense, and trilineatum, Waagen, Jurassic, 328.
Lytoceras rex, Waagen, Jurassic, 328.
Nautilus Ampezzanus, Loretz, Trias, 313.
—— (Discites) Highlandensis, Worthen, Carboniferous, 328.
Oppelia nurrhaensis and plana, Waagen, Jurassic, 327.
Orthoceras Belgicum, Malaise, Silurian, 315.
—— Caereesiense, Hicks, Silurian, 18.
—— Carleyi, Duseri, and Jamesi, Hall and Whitfield, Silurian, 330.
—— rectum, Worthen, Silurian, 328.
—— strix, Hall and Whitfield, Silurian, 331.
—— subfractum, Tromelin and Lebesconte, Silurian, 327.
—— turbidum, Hall and Whitfield, Silurian, 330.
——-Unionensis, Worthen, Silurian, 328.
Perisphinctes aberrans,
alterniplicatus, altip
catus, arcicosta, batl
plocus, cobra, conge
decorus, denseplicat
and Dhosaensis, Wa
gen, Jurassic, 327.
Perisphinctes Eggeri, A
mon, Jurassic, 47.
—— euplocus, Gudjin
rensis, hians, indoge
manus, lateralis, lei
mon, obliquiplicatus
obtusicosta, occultifurcatus, omphalode
pagri, paramorphus
perdagatus, and pra
cursor, Waagen, Ju-
rassic, 327.
—— progeron, Ammo
Jurassic, 47.
—— pseudorion, rota,
sparsiplicatus, and s
colubrinus, Waagen,
Jurassic, 327.
—— suberinus, Ammo
Jurassic, 47.
—— subevolutus and virguloides, Waagen
Jurassic, 327.
Petoceras bidens, prop
quum, and semirugo
sum, Waagen, Juras
sic, 327.
Phragmoceras Byroner
Worthen, Silurian,
—— ellipticum and p
vum, Hall and Whi
field, Silurian, 330.
Phylloceras insulare,
Jaraense, and bodaie
Waagen, Jurassic, 3
Stephanoceras arenosu

chrysoolithicum, diadematum, dimerum, excyclum, magnumbilicatum, polyphemus, semilæve, subcompressum, subtrapezinum, subtumidum, and transiens, Waagen, Jurassic, 327.
*Stoliczkaia clavigera and tetragona, Neumayr, Cretaceous, 317.
Turrilites Toucasi, Hébert and Munier-Chalmas, Cretaceous, 310.

And the new genera :—
Agassiceras and Oxynoticeras (Ammonites), Hyatt, Jurassic, 312, and Acanthoceras, Hoplites, Olcostephanus, and Schloenbachia, Neumayr, Cretaceous, 317.

PTEROPODA.

Conularia Llanvirnensis, Hicks, Silurian, 18.
Tentaculites Eldredgianus, Hartt and Rathbun, Devonian, 310.
Theca Caereesiensis and Harknessii, Hicks, Silurian, 18.

HETEROPODA.

Bellerophon Coutinhoanus and Gilletianus, Hartt and Rathbun, Devonian, 310.
—— gracilis, Mallada, 315.
Bellerophon Llanvirnensis, Hicks, Silurian, 18.
—— Morganianus, Hartt and Rathbun, Devonian, 310.
Bellerophon Naranjoanus, Mallada, 315.
—— pulchellus, Toula, Carboniferous, 324.
—— Sub-Urii, Mallada 315.

GASTEROPODA.

Alexia polyodon and suturalis, Sandberger, Miocene, 321.
Aporrhais Griffithsii, histochila, Mantelli, oligochila, pachysoma, and Parkinsoni, var. Cunningtoni, Gardner, Cretaceous, 307.
Archæozonites costatus, Sandberger, Miocene, 321.
Assiminea subaurita, Sandberger, Pliocene, 322.
Auricula Lorteti and Viennensis, Fontannes, Miocene, 307.
*Berthelinia elegans, Crosse, Tertiary, 301.
Bithynia gracilis, Sandberger, Miocene, 321.
Buccinum (?) Pengaronense, Böttger, Eocene, 299.
Bulimus turgidulus, Sandberger, Miocene, 321.
Cæcilianella acicuella, Sandberger, Miocene, 321.
Capulus lævis and minimus, Toula, Carboniferous, 324.
Carychium Crossei, Fougeroux, Tertiary, Add.
—— gibbum, Sandberger, Miocene, 321.
—— pachychilus, Sandberger, Pliocene, 321.
Cerithium confusum, Tate, Lias, 323.
—— crebrum, Blake, Kimmeridge Clay, 5.
—— ferreum, Tate, Lias, 323.
—— filocinctum, Böttger, Eocene, 299.
—— forticostatum, Blake, Kimmeridge Clay, 5.
—— Fuchsi, Hantken, M. Eocene, 69.
—— multiplicatum, Blake, Kimmeridge Clay, 5.
Chemnitzia Hoeferiana, Toula, Carboniferous, 324.
Chrysodomus Diegoensis, Dall, Tertiary, 302.
Clausilia Eckingensis, obliquiplicata, and suturalis, Sandberger, Miocene, 321.
Cominella striata, Hutton, Tertiary, 311.
Conus gracilispira, Böttger, Eocene, 299.
Cryptæna affinis, Tate, Lias, 38.
Cyclostoma Bewsheri and bipartitum, Morelet, Post-Tertiary, 317.
—— Falsani, Fontannes, 307.
Cypræa angygyra, Böttger, Eocene, 299.
—— Archeri, Woods, Tertiary, 328.
—— Cocconi, Mayer, Tertiary, 315.
—— gastroplax and gigas, M'Coy, Oligocene, 314.
—— longiscuta, Mayer, Tertiary, 315.
—— paniculus, Böttger, Eocene, 299.
Dentalium Quenstedti, Blake, Kimmeridge Clay, 5.
*Dimorphosoma ancylochila, doratochila, kinclispira, opeatochila, pleurospira, spathochila, and Vectiana, Gardner, Cretaceous, 307.
Euchilus gracilis, Sandberger, Miocene, 321.

Eulima Donayreana, Mallada, 315.
Euomphalus bifurcatus, Toula, Carboniferous, 324.
Fusus gracillimus and Robbsii, Woods, Tertiary, 328.
Glandina Noueli and Tournoueri, Fougeroux, Tertiary, Add.
Globiconcha Baconica, Hantken, Cretaceous, 69, 310.
Helix alveolus, Sandberger, Pleistocene, 321.
—— Bewsheriana, Morelet, Post-Tertiary, 317.
—— brachystoma, catantostoma, and crepidostoma, Sandberger, Miocene, 321.
—— cyclaria, Morelet, Post-Tertiary, 317.
—— Delphinensis, Fontannes, 307.
—— Dometi, Fougeroux, Tertiary, Add.
—— Eckingensis and geniculata, Sandberger, Miocene, 321.
—— goniostoma, Sandberger, Pliocene, 321.
—— malleolata, osculina, and platychelodes, Sandberger, Miocene, 321.
—— raripila, Sandberger, Pleistocene, 321.
—— subconspurcata, subpulchella, and subvermiculata, Sandberger, Miocene, 321.
—— Tonnensis, Sandberger, Pleistocene, 321.
—— Woodwardi, Bell, Cretaceous, 298.
Hipponyx anachoreta, Mayer, Jurassic, 315.
Holopea Furmaniana, Hartt and Rathbun, Devonian, 310.
—— (?) occidentalis, Nicholson, Silurian, 318.
Limnea Cosensis, Tournouer, Tertiary, 324.
Melampus Dumortieri, Fontannes, 307.
Melania gracilicosta, Sandberger, Miocene, 321.
Melanopsis Delessei, Tournouer, Tertiary, 324.
—— glandicula, Sandberger, Miocene, 321.
—— Gorceixi, œgea, and Proteus, Tournouer, Tertiary, 324.
Mitra æquiplicata, Böttger, Eocene, 299.
Murchisonia Boylei, Nicholson, Silurian, 318.
Natica cochlearia, Hantken, M. Eocene, 69.
—— patulæformis, Böttger, Eocene, 299.
—— polita, Woods, Tertiary, 328.
—— punctulata, Blake, Kimmeridge Clay, 5.
—— Winshi, Woods, Tertiary, 328.
Naticopsis lævigata, Toula, Carboniferous, 324.
Nematurella flexilabris, Sandberger, Miocene, 321.
Paludina (Vivipara) Cosensis, Forbesi, Gorceixi, and trochlearis, Tournouer, Tertiary, 324.
—— ventricosa, Sandberger, Pliocene, 321.
Patella Beesleyi and gratans, Tate, Lias, 323.
Patula euglyphoides and supracostata, Sandberger, Miocene, 321.
Planorbis amblytropis, Sandberger, Miocene, 321.
—— calculiformis, Sandberger, Pleistocene, 321.
—— crassilabris, Sandberger, Miocene, 321.
—— filocinctus and geniculatus, Sandberger, Pliocene, 321.
—— Heriacensis, Fontannes, 307.
—— micromphalus, Sandberger, Pleistocene, 321.
Planorbis pompholy Sandberger, Mioc 321.
Pleurotomaria Arcti Toula, Permo-Car ferous, 324.
—— Georgiana, To Carboniferous, 32
—— inexpectans, H and Whitfield, Sil rian, 330.
—— Llanvirnensis, Silurian, 18.
—— Rochana, Hart Rathbun, Devonia 310.
—— Serafine, Toula boniferous, 324.
—— tertiaria, M'Co Miocene, 314.
—— Vidalina, Mall 315.
Pterocera gigantea, Makowski, 315.
Pupa farcimen, San ger, Miocene, 321.
—— Heberti, Fouge Tertiary, Add.
—— kelodes and Mi Morelet, Post-Ter 317.
—— Novigentiensis, Fougeroux, Terti Add.
—— subfusiformis a trochulus, Sandbe Miocene, 321.
Purpurina armata, Lias, 323.
Pyrgula Businai, To nouer, Tertiary, 3
Rimella inæquicosta Böttger, Eocene,
Rostellaria Rasenens Blake, Kimmerid Clay, 5.
Scalaria tenuicosta, cent, Eocene, und Rutot, 96.
Straparollus Metens Friren, Jurassic,
—— Niagarensis, H and Whitfield, Sil rian, 330.
Subulites terebrifor Hall and Whitfiel Silurian, 330.
Succinea peregrina berger, Miocene,

Terebra bifilifera, Böttger, Eocene, 299.
—— simplex, Woods, Tertiary, 328.
Tremanotus (?) trigonostoma, Hall and Whitfield, Silurian, 330.
Triton Abboti, Woods, Tertiary, 328.
Trochus excavatus and retrorsus, Blake, Kimmeridge Clay, 5.
—— solitarius and tiarellus, Tate, Lias, 38, 323.
Turbo Borneensis, Böttger, Eocene, 299.
Turbo Epaphoides, Loretz, Trias, 313.
—— paucicingulatus, Böttger, Eocene, 299.
—— viator, Mayer, Jurassic, 315.
Typhis M'Coyi, Woods, Tertiary, 328.
Valenciennesia Pauli, Hoernes, Tertiary, 311.
Valvata Deshayesi, Fougeroux, Tertiary, Add.
—— gracilis, Sandberger, Miocene, 321.
Valvata inflata, Sandberger, Pliocene, 321.
—— radiatula, Sandberger, Miocene, 321.
—— vallestris, Fontannes, 307.
Voluta Weldii, Woods, Tertiary, 328.
Zizyphinus Hodgei, Hutton, Tertiary, 311.

And the new genera Brachytrema, Ditretus, Eustoma, and Petersia, Bayan, Jurassic, 321.

LAMELLIBRANCHIATA.

Allorisma Barentina, Toula, Carboniferous, 324.
Ambonychia Illinoisensis, Worthen, Silurian, 328.
Amphicœlia costata, Hall and Whitfield, Silurian, 330.
Anatina annulifera, Böttger, Eocene, 299.
—— minuta, Blake, Kimmeridge Clay, 5.
Anomia Dollfusii, Blake, Kimmeridge Clay, 5.
—— micronema, Meek, Tertiary, 316.
Anthracosia gigantea, Goldenberg, Carboniferous, 308.
Arca (Cucullæa?) Harttii Rathbun, Cretaceous, 321.
—— longipunctata, Blake, Kimmeridge Clay, 5.
—— lucinæformis, Böttger, Eocene, 299.
—— (Cucullæa?) Orestis, Rathbun, Cretaceous, 321.
—— reticulata, Blake, Kimmeridge Clay, 5.
—— solitaria, Mayer, Jurassic, 315.
Astarte divaricata, Cross, Inf. Oolite, 9.
—— Gillieroni, Mayer, Jurassic, 315.
Astartella Newberryi, Meek, Carboniferous, 331.
Avicula ædilignensis and Dorsetensis, Blake, Kimmeridge Clay, 5.
—— Hoeferiana and laticostata, Toula, Carboniferous, 324.
—— nummulina, Blake, Kimmeridge Clay, 5.
—— peregrina, Böttger, Eocene, 299.
—— pernula, Mayer, Jurassic, 315.
—— vellicata, Blake, Kimmeridge Clay, 5.
Aviculopecten Draschei, Toula, Permo-Carboniferous, 324.
—— Hertzeri, Meek, Carboniferous, 331.
—— Unionensis, Worthen, Devonian, 328.
—— Winchelli, Meek, Carboniferous, 331.
Callista M'Grathiana, Rathbun, Cretaceous, 321.
Cardinia rugulosa, Tate, Lias, 38.
—— subovalis, Mallada, 315.
Cardiomorpha subglobosa, Meek, Carboniferous, 331.
Cardita arcæformis and (Venericardia) Borneensis, Böttger, Eocene, 299.
Cardita consimilis, Tate, Lias, 38.
—— Morganiana and Wilnotii, Rathbun, Cretaceous, 321.
Cardium deplanatum and eduliforme, Böttger, Eocene, 299.
—— Oriovacense and Slavonicum, Neumayr, Tertiary, 317.
—— Soaresanum, Rathbun, Cretaceous, 321.
—— speluncarium, Neumayr, Tertiary, 317.
—— subfragile, Böttger, Eocene, 299.
—— Wiesneri, Hantken, M. Eocene, 69.
Congeria Banatica, Hoernes, Tertiary, 311.
Conocardium Cortazari, Mallada, 315.
Corbicula (?) planumbona, Meek, Tertiary, 316.
Corbis minor, Böttger, Eocene, 299.
Crassatella aphrodina and oblonga, Woods, Tertiary, 328.
Cucullæa Rolandi and Santonensis, Cross, Inf. Oolite, 9.
—— subcentralis, Rathbun, Cretaceous, 321.
*Cuneamya Miamiensis and scapha, Hall and Whitfield, Silurian, 330.
Cypricardia (?) sulcosa

and (Modiolaria) tenuis, Böttger, Eocene, 299.
Cypricardites ferrugineum, Hall and Whitfield, Silurian, 330.
Cyprina cyreniformis, Blake, Kimmeridge Clay, 5.
Cyrena (Batissa) Borneensis, Verbeek, Eocene, 299.
—— (?) Holmesi, Meek, Tertiary, 316.
—— (Corbicula) Pengaronensis, Böttger, Eocene, 299.
Dreissena alta, Sandberger, Miocene, 321.
Edmondia gracilis, Toula, Carboniferous, 324.
—— Pondiana and sylvana, Hartt and Rathbun, Devonian, 310.
—— (?) tapesiformis, Meek, Carboniferous, 331.
Exogyra Mornasiensis, Hébert and Munier-Chalmas, Cretaceous, 310.
Hemicardium dolomiticum, Loretz, Trias, 313.
Hippopodium ferri, Cross, L. Lias, 9.
Ilionia Canadensis, Billings, U. Silurian, Suppl.
Inoceramus expansus, Blake, Kimmeridge Clay, 5.
—— Gosseleti, Decocq, Chalk, 303.
—— Haueri, Zugmayer, Cretaceous, 330.
—— insularis & Lezennensis, Decocq, Chalk, 303.
—— œnipontanus, Pichler, Trias, 321.
Leda Braziliensis, Rathbun, Cretaceous, 321.
—— clava, Guppy, Tertiary, 309.
—— lineata, Blake, Kimmeridge Clay, 5.
—— Swiftiana, Rathbun, Cretaceous, 321.
Lima ædilignensis, Blake, Kimmeridge Clay, 5.
—— scaberrima, Ammon, M. Jurassic, 47.
Lucina Borneensis and corbulæformis, Böttger, Eocene, 299.
—— minuscula, Blake, Kimmeridge Clay, 5.
—— tenella, Rathbun, Cretaceous, 321.
Lyonsia Agnewi, Woods, Tertiary, 328.
Lyrodesma Dufeti and securis, Tromelin and Lebesconte, Silurian, 327.
Modiola lithodomoides, Etheridge, Jun., Carboniferous, 305.
Modiolopsis Cincinnatiensis and concentricus, Hall and Whitfield, Silurian, 330.
Modiomorpha Pimentana, Hartt and Rathbun, Devonian, 310.
Monotis Gümbeli, Ammon, Jurassic, 47.
Myalina Keokuk, Worthen, Carboniferous, 328.
Nucula Mariæ, Rathbun, Cretaceous, 321.
—— obliquata, Blake, Kimmeridge Clay, 5.
Nuculites Ererensis, Hartt and Rathbun, Devonian, 310.
*Orthodesma curvata and recta, Hall and Whitfield, Silurian, 330.
Orthonota Lebescontei, Guillier and Tromelin, Suppl.
Ostrea callacta, Conrad, Tertiary, 300.
—— hippuritarum, Hébert and Munier-Chalmas, Cretaceous, 310.
Palæoneilo Bedfordensis, Meek, Carboniferous, 331.
—— (?) simplex and sulcata, Hartt and Rathbun, Devonian, 310.
Panopæa filifera, Böttger, Eocene, 299.
Pecten Quenstedti, Blake, Kimmeridge Clay, 5.
—— rete and subarcuatus, Böttger, Eocene, 299.
Pecten Toarcianus, M Jurassic, 315.
Perna Urkutica, Ha M. Eocene, 69.
Pholadidea abbrevia Blake, Kimmeridg Clay, 5.
Pholadomya Elizabe Moesch, Cretaceo 316.
—— Haydeni, Moes Miocene, 316.
—— Zitteli, Moesch, rassic, 316.
Pinna Reynesi, Hébe and Munier-Chaln Cretaceous, 310.
—— subspatulata, W then, Carboniferou 328.
Placunopsis recticar nalis, Meek, Carbo ferous, 331.
Pleurophorus tropid phorus, Meek, Car niferous, 331.
Posidonomya fracta, Meek, Carbonifero 331.
Prothyris Meeki, Win (see Meek), Carbon ferous, 331.
Psammosolen truncat Böttger, Eocene, 2
*Pseudarca typa, Tr melin and Lebesco Silurian, 327.
Schizodus cuneatus, M Carboniferous, 331.
—— Salteri, Etherid Jun., Carboniferou 306.
Sedgwickia (?) divaricata, Hall and Whi field, Silurian, 330.
Siliqua annulifera, Bö ger, Eocene, 299.
Solecurtus Legrandi, Woods, Tertiary, 3
Solenomya (?) anodon toides, Meek, Carbo ferous, 331.
Sphæriola (?) obliqua, Meek, Cretaceous, 3
Sunetta sinuosa, Böttg Eocene, 299.
Tancredia ferrea and liassica, Cross, L. Lias, 9.

Tellina biornata, Böttger, Eocene, 299.
—— Pernambucensis, Rathbun, Cretaceous, 321.
—— rotundata, Böttger, Eocene, 299.
Teredina annulata, Böttger, Eocene, 299.
Teredo striolatus, Böttger, Eocene, 299.
Trigonia acuticostata, M'Coy, L. Pliocene, 314.
Trigonia Cunningtoni, dædalea, var. confusa, and Etheridgei, Lycett, Cretaceous, 314.
—— Howitti, M'Coy, Pliocene, 314.
—— læviuscula, Meyeri, nodosa, var. Orbignyana, and scabricola, Lycett, Cretaceous, 314.
—— semiundulata, M'Coy, L. Pliocene, 314.
—— Tealbyensis, Upwarensis, Vectiana, and Vicaryana, Lycett, Cretaceous, 314.
Trigonodus superior, Loretz, Trias, 313.
Unio Cristonensis, Meek, America, 132.
Venus Allporti, Woods, Tertiary, 328.
—— (?) sulcata, Hutton, Tertiary, 311.
—— sulcifera, Böttger, Eocene, 299.

And the new genus Pteronitella, Billings, Suppl.

BRACHIOPODA.

Chonetes capitolinus, Toula, Permo-Carboniferous, 324.
—— rotundatus, Toula, Carboniferous, 324.
Crania Adanii, Davidson, Tertiary, Suppl.
—— Dyeri and multipunctata, Miller, Silurian, 316.
Dinobolus (?) Hicksii, Davidson, Silurian, 18.
Discina dissimilis, Richter, Silurian, 321.
—— elevata, Blake, Kimmeridge Clay, 5.
—— pleurites, Meek, Carboniferous, 331.
Lingula Covingtonensis, Hall and Whitfield, Silurian, 330.
—— Van Hornei, Miller, Silurian, 316.
Lingulella Cincinnatiensis, Hall and Whitfield, Silurian, 330.
Monomerella Newberryi, Hall and Whitfield, Silurian, 330.
Obolus pectinoides, Ludlow, 125.
Orthis Meeki, Miller, Silurian, 316.
Orthoidea liasina, Friren, M. Lias, 307.
Pentamerus pergibbosus, Hall and Whitfield, Silurian, 330.
Productus Aargardi and impressus, Toula, Permo-Carboniferous, 324.
Rhynchonella Endlichi, Meek, Devonian, 316.
—— pisa, Hall and Whitfield, Silurian, 330.
—— tetractis and Toblachensis, Loretz, Trias, 313.
Spirifer Draschei and Parryanus, Toula, Permo-Carboniferous, 324.
Spirifer striatiformis, Meek, Carboniferous, 331.
Spiriferina palæotypus, Loretz, Trias, 313.
Terebratula Helena, Ludlow, Cretaceous, 125.
—— Ortliebi, Bayan, L. Tertiary, 298.
—— Pengaronensis, Böttger, Eocene, 299.
—— sub-Bavarica, Ammon, M. Jurassic, 47.
Thecidium Tyrolense, Loretz, Trias, 313.
Trematospira (?) quadriplicata, Miller, Silurian, 316.
Waldheimia Kennedyi, Dall, Tertiary, 302.
Also the new genus Schizocrania, Hall and Whitfield, Silurian, 330.

POLYZOA.

Alecto auloporoides, confusa, and frondosa, Nicholson, Silurian, 319.
—— nexilis, James, Silurian, 312.
Archimedipora Arctica, Toula, Carboniferous, 324.
Ceramopora Huronensis, Nicholson, Devonian, 318.
—— Nicholsoni, James, Silurian, 312.
Ceramopora Ohioensis, Nicholson, Silurian, 319.
Fenestella Davidsoni, Nicholson, Devonian, 318.
—— inconstans, Toula, Carboniferous, 324.
—— multiporata, M'Coy, var. Lodiensis, Meek, Carboniferous, 331.
—— nervata, Nicholson, Silurian, 319.
*Heterodictya gigantea, Nicholson, Devonian, 318.
*Hyphasmopora Buskii, Etheridge, Jun., L. Carboniferous, 306.
Phænopora expansa, Hall and Whitfield, Silurian, 330.
Phyllopora Laubei, Toula, Permo-Carboniferous, 324.
Polypora crassi-papillata, Toula, Carboniferous, 324.

Polypora grandis, Toula, Permo-Carboniferous, 324.
—— pustulata and subquadrata, Toula, Carboniferous, 324.
Ptilodictya acuminata, James, Silurian, 312.
—— (?) arctipora, Nicholson, Silurian, 319.
—— cosciniformis, Nicholson, Devonian, 318.
—— emacerata, Nicholson, Silurian, 319.
Ptilodictya falciformis, Nicholson, Silurian, 318, 319.
—— fenestelliformis and flagellum, Nicholson, Silurian, 319.
—— seriata, Meek, Carboniferous, 331.
*Ranipora Hochstetteri, Toula, Permo-Carboniferous, 324.
Retepora M'Coyana, Etheridge, Jun., Tertiary, 306.
Retepora Trentone
cholson, Siluriar
Rhinopora frondos
and Whitfield, S
rian, 330.
Spiropora Liassica
Jurassic, 323.
Stictopora magna,
and Whitfield, S
rian, 330.
Thamniscus Ranki
Prof. Young and
Young, Carbonif
329.

ANNULOSA.

INSECTA.

Acridites formosus, Goldenberg, Carboniferous, 308.
Blattina anaglyptica, var. Labachensis, Goldenberg, Carboniferous, 308.
—— Bretonensis and Heeri, Scudder, Carboniferous, Suppl.
—— insignis and Tischbeini, Goldenberg, Carboniferous, 308.
*Breyeria Borinensis, Preudhomme de Borre, Carboniferous, 298.
*Coliates Proserpina, Scudder, Tertiary, 322.
*Lithadothrips vetusta, Scudder, Tertiary, 323.
Melanothrips extincta, Scudder, Tertiary, 323.
*Pachytylopsis Persenairei, Preudhomme de Borre, Carboniferous, 298.
*Pamphilites abdita
der, Tertiary, 32
Termes Buchi, Gol
berg, Carbonifero
Thaites ruminiana,
(see Scudder), 32

And the new gener
Lethites, Myloth
and Thanatites.
Scudder, Tertiar

CRUSTACEA.

Acidaspis O'Nealli, Miller, Silurian, 316.
Æglina Boia and obtusicaudata, Hicks, Silurian, 18.
Ampyx Salteri, Hicks, Silurian, 18.
Arthropleura affinis and punctata, Goldenberg, Carboniferous, 308.
Bairdia plebeia, var. munda, Jones and Kirkby, Carboniferous, 312.
Barrandea Homfrayi, Hicks, Silurian, 18.
Beyrichia quadrilirata, Hall and Whitfield, Silurian, 330.
Bohemilla (?) denticulata, Linnarsson, Silurian, 313.
Branchipusites anthracinus, Goldenberg, Carboniferous, 308.
Calymene Bayani, Tromelin and Lebesconte, Silurian, 327.
—— Hopkinsoni, Hicks, Silurian, 18.
*Cyclognathus micropygus, Linnarsson, Silurian, 313.
Cythere Wrightii, Jones, under Wright, Cretaceous, 329.
Cytherella Murchisoniana, Jones and Kirkby, Carboniferous, 312.
Dalmania Paituna, Hartt and Rathbun, Devonian, 310.
Dicillocephalus Billingsi, Linnarsson, Silurian, 313.
Encrinurus ornatus, Hall and Whitfield, Silurian, 330.
Estheria tenella, Goldenberg, Carboniferous, 308.
*Eusarcus grandis a
scorpionis, Grote
Pitt. U. Silurian,
Gebia controversa,
bolet, Cretaceous
Harpes excavatus, I
narsson, Silurian
Homalonotus Oiara,
and Rathbun, De
nian, 310.
—— Omaliusii, Ma
Silurian, 315.
Illænopsis (?) acutic
data, Hicks, Siluri
Illænus Daytonensis
Hall and Whitfie
Silurian, 330.
—— Hughesii, Hicl
lurian, 18.
Leperditia Okeni, v
obliqua, Jones an
Kirkby, Carbonif
312.
Liostracus (?) super
Linnarsson, Siluria

Oniscina ornata, Goldenberg, Carboniferous, 308.
Phacops Llanvirnensis, Hicks, Silurian, 18.
Phillipsia (Griffithides ?) Lodiensis, Meek, Carboniferous, 331.
Placoparia Cambriensis, Hicks, Silurian, 18.
Plumulites [Turrilepas] Jamesi, Hall and Whitfield, Silurian, 330.
Primitia Eichwaldi, Jones and Kirkby, Carboniferous, 312.
Pterygotus Cummingsiæ, Grote and Pitt, U. Silurian, 308.
Remopleurides microphthalmus, Linnarsson, Silurian, 313.
Scalpellum reticulatum, Blake, Kimmeridge Clay, 5.
Sphæroma Burkartii, Barcena, 297.
Triarthrus Jemtlandicus, Linnarsson, Silurian, 313.
Trinucleus Etheridgei and Ramsayi, Hicks, Silurian, 18.

ANNELIDA.

Ditrupa dentalinum, Guppy, Tertiary, 309.
Spirorbis spinuliferus, Nicholson, Devonian, 318.
Vermicularia contorta, Blake, Kimmeridge Clay, 5.

ANNULOIDA.

ECHINODERMATA.

Acrosalenia miranda, Cotteau, Cretaceous, 301.
Asteroblastus tuberculatus and Volborthii, Schmidt, Silurian, Suppl.
Barycrinus striatus, Worthen, Carboniferous, 328.
Bothriocidaris Pahleni, Schmidt, Silurian, Suppl.
Bothriopygus Meslei and Trapeti, Cotteau, Cretaceous, 301.
Calceocrinus Barrisi, Worthen, Devonian, 328.
Catopygus Vectensis, Wright, Cretaceous, 329.
Cidaris Babeaui, Bajocensis, bellensis, Caraboeufi, Caumonti, Chantrei, Collenoti, Corsei, Desmoyeri, Dumortieri, Eharmassei, episcopalis, Julii, Langrunensis, and Lorteti, Cotteau, Jurassic, 300.
—— Mayeri, De Loriol, Tertiary, 313.
—— Morieri, Nunieri, Pellati, and pilosa, Cotteau, Jurassic, 300.
—— pseudosceptrifera, Hébert, Cretaceous, 310.
Cidaris subundosa and Toucasi, Cotteau, Jurassic, 300.
Clypeopygus Fittoni, Wright, Cretaceous, 329.
Codiopsis Meslei, Cotteau, Cretaceous, 301.
Cyphosoma supracorallinum, Cotteau, Jurassic, 300.
Dorycrinus Kelloggi, Worthen, Carboniferous, 328.
Echinanthus Bosteri, De Loriol, Tertiary, 313.
Echinobrissus Durandi, humilis, and Sebaensis, Cotteau, Cretaceous, 301.
Echinoconus Icaunensis, Cotteau, Cretaceous, 300.
—— Soubdellensis, Cotteau, Cretaceous, 301.
Echinospatangus Africanus, subcavatus, and Villei, Cotteau, Cretaceous, 301.
Eucalyptocrinus magnus, Worthen, Silurian, 328.
Eupachycrinus Bassetti and Craigii, Worthen, Carboniferous, 328.
Glyptocystites sculptus and Volborthii, Schmidt, Silurian, Suppl.
Hemiaster Gaudryi, Hébert and Munier-Chalmas, Cretaceous, 310.
Hemicidaris Leymeriei, Cotteau, Jurassic, 300.
—— Meslei, Cotteau, Cretaceous, 301.
Hemipatagus Woodsi, Etheridge, Jun., Cretaceous, 308.
Holaster Brongniarti, Hébert and Munier-Chalmas, Cretaceous, 310.
Holectypus afer, Cotteau, Cretaceous, 301.
—— bistriatus, Wright, Cretaceous, 329.
*Infraclypeus Thalebensis, Cotteau, Cretaceous, 301.
Magnotia Meslei, Cotteau, Cretaceous, 301.
Melocrinus Bainbridgensis, Hall and Whitfield, Devonian, 330.
Onychocrinus magnus, Worthen, Carboniferous, 328.
Pentremites subcylindrica, Hall and Whitfield, Silurian, 330.
—— Varsouviensis, Worthen, Carboniferous, 328.
Platycrinus Bedfordensis, Hall and Whitfield, Devonian, 330.

Platycrinus Lodensis, Hall and Whitfield, Carboniferous, 330.
—— præmaturus, Hall and Whitfield, Silurian, 330.
—— Richfieldensis, Hall and Whitfield, Carboniferous, 330.
Poteriocrinus Coreyi, Hoveyi, La Sallensis, proboscidalis, and Van Hornei, Worthen, Carboniferous, 328.
Pseudodiadema Anouelense, Cotteau, Cretaceous, 301.
Pygorhynchus Mayeri, De Loriol, Tertiary, 313.
Pygurus eurypneustes and impar, Cotteau, Cretaceous, 301.
Rhabdocidaris Durandi and janitoris, Cotteau, Cretaceous, 301.
Saccocrinus ornatus, Hall and Whitfield, Silurian, 330.
Salenia texana, Cre
U. Cretaceous, 3(
Scaphiocrinus abno
Worthen, Carbor
ferous, 328.
*Tetradium Wrange
Schmidt, Siluriar
Suppl.
Trematopygus Fari
donensis, Wright
taceous, 329.
And the new genus
sacrinus, Austin,
boniferous, 297.

CŒLENTERATA.

ACTINOZOA.

Acervularia Clintonensis, Nicholson, Silurian, 331.
Alveolites (?) granulosa, James, Silurian, 312.
Amplexus biseptatum, Maurer, Devonian, 83.
*Aspidophyllum cruciforme, Hennedii, Huxleyanum, and Koninckianum, Thomson, Carboniferous, 323.
Axophyllum infundibulum, Worthen, Carboniferous, 328.
Axosmilia alpina, Loretz, Trias, 313.
Calamophyllia disputabilis, Becker and Milaschewitsch, Jurassic, 298.
Callopora Arctica, Toula, Carboniferous, 324.
—— minutissima, Nicholson, Devonian, 318.
Campophyllum intermedium, Toula, Carboniferous, 324.
Chætetes briareus, Nicholson, Silurian, 331.
—— (?) calycula, James, Silurian, 312.
—— (?) carbonaria, Worthen, Carboniferous, 328.
—— Cincinnatiensis and clavacoideus, James, Silurian, 312.
—— Newberryi, Nicholson, Silurian, 331.
Chætetes ? O'Nealli, James, Silurian, 312.
—— petechialis, sigillarioides, and subpulchellus, Nicholson, Silurian, 331.
—— undulatus, Nicholson, Silurian, 319.
Chorisastræa dubia, Becker and Milaschewitch, Jurassic, 298.
Cladophyllia septannectens, Loretz, Trias, 313.
Clisiophyllum Geinitzi and Nordenskiöldi, Toula, Permo-Carboniferous, 324.
Cœlosmilia forjouliensis, D'Achiardi, Eocene, 297.
Constellaria polystomella, Nicholson, Silurian, 331.
Cyathophora magnistellata, Becker and Milaschewitsch, Jurassic, 298.
Cyathoxonia distorta, Worthen, Carboniferous, 328.
Cystiphyllum fruticosum, Nicholson, Devonian, 318.
—— gracile, Ludwig, Silurian, 80 (1st entry).
—— Ohioense, squamosum, and superbum, Nicholson Devonian, 313.
Dendrophyllia epitl
Duncan, Tertiary
Dimorphastræa affi
concentrica, fallax
helianthus, Becke
Milaschewitsch, J
sic, 298.
Dimorphophyllia co
naris and Jurensi
Becker and Milasc
witsch, Jurassic, 2
Enallohelia tubulosa
Becker and Milasc
witsch, Jurassic, 2
Epismilia Alpina, D'
ardi, Eocene, 297.
—— calycularis, cun
and cylindrica, Be
and Milaschewitsc
Jurassic, 298.
—— (?) dubiosa, D'
ardi, Eocene, 297.
—— Fromenteli, rep
and rugosa, Becker
Milaschewitsch, Ju
sic, 298.
Favistella calicina, N
cholson, Silurian,
320.
Favosites invaginata
pleurodictyoides,
cholson, Devonian,
331.
Isastræa crassiseptat
Becker and Milasc
witsch, Jurassic, 2
Latimæandra brevi
Becker and Milasc
witsch, Jurassic, 2

Latimæandra pulchella, Becker and Milaschewitsch, Jurassic, 298.
Lithostrotion grandis, Toula, Carboniferous, 324.
Lophosmilia granulosa, D'Achiardi, Eocene, 297.
Montlivaltia bullata, cyathus, dianthus, Nattheimensis, obconica, pirum, and unicornis, Becker and Milaschewitsch, Jurassic, 298.
Palæophyllum divaricans, Nicholson, Silurian, 331.
Parasmilia jurassica, Becker and Milaschewitsch, Jurassic, 298.
Phyllosmilia calyculata, crassa, and Pironæ, D'Achiardi, Eocene, 297.
Placophyllia rugosa, Becker and Milaschewitsch, Jurassic, 298.
Placosmilia elliptica, Italica, lata, and strangulata, D'Achiardi, Eocene, 297.
*Plesiosmilia cylindrata, excavata, hemisphærica, infundibuliformis, sessilis, and turbinata, Becker and Milaschewitsch, Jurassic, 298.
Pleurosmilia crassa and valida, Becker and Milaschewitsch, Jurassic, 298.
Protoseris foliosa, robusta, and suevica, Becker and Milaschewitsch, Jurassic, 298.
Rhipidogyra costata, Becker and Milaschewitsch, Jurassic, 298.
Stylina fallax, Becker and Milaschewitsch, Jurassic, 298.
Stylosmilia suevica, Becker and Milaschewitsch, Jurassic, 298.
Trochocyathus Taramellii, D'Achiardi, Eocene, 297.
Trochosmilia Cormonsensis, (?) elongata, Pasiniana, and (?) Pironana, D'Achiardi, Eocene, 297.
Thamnastræa discrepans, gibbosa, grandis, heterogenea, major, pattina, prolifera, prominens, pseudarachnoides, robustiseptata, seriata, speciosa, and subagaricites, Becker and Milaschewitsch, Jurassic, 298.
Zaphrentis Edwardsi, multilamellata, and Wortheni, Nicholson, Devonian, 331.

HYDROZOA.

GRAPTOLITIDÆ. (Silurian.)

*Azygograptus Lapworthi, Nicholson and Lapworth, 319.
Callograptus radiatus, Hopkinson, 311.
*Clematograptus implicatus, Hopkinson, 311.
Climacograptus cœlatus, Lapworth, 311.
—— confertus, Lapworth, 311.
Dendrograptus arbuscula, persculptus, Ramsayi, and serpens, Hopkinson, 311.
Dicranograptus posthumus, Richter, Silurian, 312.
Dictyograptus [Dictyonema] cancellatus and Homfrayi, Hopkinson, 311.
Didymograptus euodus and furcillatus, Lapworth, 311.
—— gibberulus, Nicholson, 319.
—— Nicholsoni, Lapworth, 311.
—— sparsus, Hopkinson, 311.
Diplograptus Hudsonicus, Nicholson, 318.
Monograptus microdon, Richter, Silurian, 321.
Phyllograptus stella, Hopkinson, 311.
Ptilograptus acutus, cristula, and Hicksii, Hopkinson, 311.
Tetragraptus Halli and Hicksii, Hopkinson, 311.
Thamnograptus Doveri, Nicholson, 319.
Trigonograptus truncatus, Lapworth, 311.

INCERTÆ SEDIS.

Inocaulis bella, Hall and Whitfield, Silurian, 330.

PROTOZOA.

SPONGIDA.

Actinolithis apiculata, hexaclados, Neptunia, ornithopus, spinosa, tornata, and trifida, Ehrenberg, Post-Tertiary, 304.
Cnemidium (?) Trentonense, Worthen, Silurian, 328.
Rhabdolithis falx, fungillus, ingens, pipa, sceptrum, serra, tortuosa, and umbraculum, Ehrenberg, Post-Tertiary, 304.
[The species of Actinolithis and Rhabdolithis are founded upon spicules only.]

POLYCYSTINA.

*Chlamydophora Chilensis, Ehrenberg, Post-Tertiary, 304.
Flustrella macropora, Ehrenberg, Post-Tertiary, 304.
Halicalyptra setosa, Ehrenberg, Post-Tertiary, 304.
Lithochytris Barbadensis, Ehrenberg, Post-Tertiary, 304.
Lychnocanium falcifer Ehrenberg, Post-Ter tiary, 304.
Stylodictya bispiralis a Forbesii, Ehrenberg, Post-Tertiary, 304.

FORAMINIFERA.

Bolivina elongata, nobilis, and reticulata, Hantken, Tertiary, 309.
Cassidulina globosa, Hantken, Tertiary, 309.
Clavulina cylindrica, Hantken, Tertiary, 309.
Cornuspira oligogyra, Hantken, Tertiary, 309.
Cristellaria elegans, irregularis, minima, minuta, ornata, Porvaënsis, and Schwageri, Hantken, Tertiary, 309.
Dentalina Budensis, Gümbeli, intermedia, semilævis, setosa, and sublaxa, Hantken, Tertiary, 309.
Dimorphina elegans, Hantken, Tertiary, 309.
Discorbina Baconica, elegans, and eximia, Hantken, Tertiary, 309.
Flabellina Budensis and striata, Hantken, Tertiary, 309.
Frondicularia superba, Hantken, Tertiary, 309.
Gaudryina irregularis and textilarioides, Hantken, Tertiary, 309.
Lingulina glabra, Hantken, Tertiary, 309.
Marginulina Budensis, indifferens, necta, pauciliculata, splendens, and subbullata, Hantken, Tertiary, 309.
Nodosaria Budensis and coarctata, Hantken, Tertiary, 309.
Nummulina Ramondi, var. Verbeekiana, Brady, Tertiary, 299.
Nummulites Budensis and Madaraszi, Hantken, Tertiary, 309.
Orbitoides Sumatrensis, Brady, Tertiary, 299.
Planulina mica, Ehrenberg, Post-Tertiary, 304.
Pleurostomella acuta, Hantken, Tertiary, 309.
Polymorphina acuta and subcylindrica, Hantken, Tertiary, 309.
Pulvinulina affinis, lobata, pygmæa, and similis, Hantken, Tertiary, 309.
Ramulina brachiata, Jones, under Wrigh 329.
Rhynchospira abnormi Hantken, Tertiary, 3
Robulina baconica and granulata, Hantken, Tertiary, 309.
Rotalia (?) Barbadensis Ehrenberg, Post-Ter tiary, 304.
Siderolina Rochi, Hantken, Tertiary, 309.
Textilaria Budensis and globosa, Hantken, Te tiary, 309.
—— globulosa and pyg mæa, Dawson, Cretaceous, 303.
—— subflabelliformis, Hantken, Tertiary, 3
Triloculina Porvaënsis, Hantken, Tertiary, 3
Truncatulina Budensis, compressa, costata, evoluta, and granosa, Hantken, Tertiary, 3
Valvulina pectinata, Hantken, Tertiary, 3

INCERTÆ SEDIS.

*Dictyostroma undulata, Nicholson, Silurian, 331.
Pasceolus Rathi, Kayser, M. Devonian, 313.
Placolithis ocellata, Ehrenberg, Post-Tertiary, 304.
Receptaculites Ohioensis, Hall and Whitfield, Silurian, 330.
Stephanolithis annularis, nodosa, and spinescens, Ehrenberg, Post-Tertiary, 304.
Stromatopora nulliporoides, ponderosa, a substriatella, Nichols Devonian, 318, 331.
*Syringostroma columna and densa, Nicholso Devonian, 331.

PLANTS.

Adiantides Machaneki, Stur, Culm, 340.
Alethopteris Bunburyi, Holdeni, and maxima, Andrews, Carboniferous, 334.
Anomozamites gracilis, Nathorst, Oolite, 338.
Archæopteris Dawsoni and lyra, Stur, Culm, 340.
—— stricta, Andrews, Carboniferous, 334.
—— Tschermaki, Stur, Culm, 340.
Asterophyllites (?) erectifolius and minutus, Andrews, Carboniferous, 334.
Botryopteris dubius and forensis, Renault, Carboniferous, 339.
*Camptophyllum Schimperi, Nathorst, Oolite, 338.
Cardiocarpon Newberryi, Andrews, Carboniferous, 334.
Cladophlebis Heeri, Nathorst, Oolite, 338.
Clathropodium foratum, Sarlatense, and Trigeri, Saporta, 339.
Cycadeomyelon Hettangense, Saporta, 339.
Cycadites apoldensis, Compter, Keuper, 335.
—— longifolius, Nathorst, Oolite, 338.
Cycadopteris antiqua, Stur, Culm, 340.
Cyparissidium cretaceum and Suessii, Schenk, Cretaceous, 340.
Drepanophycus Machaneki, Stur, Culm, 340.
Equisetum Heeri, Schenk, Cretaceous, 340.
Eremopteris marginata, Andrews, Carboniferous, 334.
Fittonia insignis and Rigauxii, Saporta, 339.
Gingkophyllum Grasseti, Saporta, Permian, 339.
Hymenophyllites Ballantini, Andrews, Carboniferous, 334.
Hysterites Friesi, Nathorst, Oolite, 338.
Jordania Moravica, Geinitz, Tertiary, 337.
Kaloxylon Hookeri, Williamson, Carboniferous, 340.
Knorria Benedeniana, Geinitz, Carboniferous, 337.
Leguminosites lanceolatus and ovatus, Schenk, Cretaceous, 340.
Lepidodendron Burnotense (= Filicites lepidorachis, Coemans), Gilkinet, Devonian, 337.
—— Rushvillense, Andrews, Carboniferous, 334.
Lepidophloios Lesquereuxii, Andrews, Carboniferous, 334.
Lepidophyllum horridum (= Flabellaria Sternbergi, Ett.), Feistmantel, Carboniferous, 336.
Lomatopteris Schimperi, Schenk, 339.
Lycopodium carbonaceum, Feistmantel, Carboniferous, 336.
Megalopteris Harttii, lata, minima, and ovata, Andrews, Carboniferous, 334.
*Orthogoniopteris clava and Gilberti, Andrews, Carboniferous, 334.
Oxycarpia bifaria, Trautschold, Tertiary, 103.
Pinites antecedens, Stur, Culm, 340.
Pinites Lundgreni and Nilssoni, Nathorst, Oolite, 338.
Podozamites ovalis, Nathorst, Oolite, 338.
Proteoides affinis and Ettingshauseni, Schenk, Cretaceous, 340.
Psaronius Renaulti, Williamson, Carboniferous, 340.
Rhacopteris flabellifera, Machaneki, paniculifera, and transitionis, Stur, Culm, 340.
Rhizomopteris Schenki, Nathorst, Oolite, 338.
Rhodea filifera, gigantea, and Hochstetteri, Stur, Culm, 340.
Schizolepis Follini, Nathorst, Oolite, 338.
Sphenopteris Falkenhaimi, foliolata, Haueri, Kiowitzensis, and striatula, Stur, Culm, 340.
—— Pichleri, Schenk, Cretaceous, 340.
*Swedenborgia cryptomerides, Nathorst, Oolite, 338.
Tæniopteris Daintreei, M'Coy, Secondary, 314.
Thinnfeldia Nordenskioldi, Nathorst, Oolite, 338.
Thyrsopteris schistorum, Stur, Culm, 340.
Todea Lipoldi, Stur, Culm, 340.
Trichopitys heteromorpha, Saporta, Permian, 339.
Walchia antecedens, Stur, Culm, 340.
Zamiostrobus stenorrhachis, Nathorst, Rhætic, 338.

MAPS AND SECTIONS.

Aude. Carte des stations thermales de l'Aude et des environs. [Map of the Thermal Springs of the Aude and of the Adjoining Regions.] *Toulouse.*

Australia *including* **Tasmania.** First Sketch of a Geological Map of. By **R. B. Smyth.** Scale of 1 : 7,000,000, or 110 miles to an inch.

The formations and rock-masses shown are:—U., M., and L. *Tertiary*, with Desert Sandstone (position unknown); *Secondary* (Cretaceous and Carbonaceous); *Primary* (Carboniferous, Devonian, and Silurian); Crystalline and Metamorphic; Igneous and Plutonic (Newer and Older Volcanic, Trap and Granite). A considerable area S.W. of the Gulf of Carpentaria and the larger portion of the W. half of Australia is uncoloured, from the lack of information. The vast area occupied by the "Desert Sandstone" over the whole of Australia, the great extent of Cretaceous rocks in E. Australia, and of granite rocks in S.W. Australia, are shown by this map. R. E., Jun.

Austrian and Hungarian Empire. Geologische Karte von Österreich-Ungarn auf Grundlage der Aufnahme der k. k. geol. Reichsanstalt. [Geological Map, based on the Government Geological Survey.] Scale 1 : 2,016,000. By **Franz Ritter von Hauer.** Ed. 2. *Vienna.*

Shows Alluvium, Neogene, Eocene, Chalk, Jura, Rhætic, Trias, Dyas, Coal Measures, Devonian, Silurian; as well as Serpentine, Granite, Syenite, and other igneous and metamorphic rocks. H. B. W.

Bristol and Suburbs, Geological Map of. Scale 8 inches to a mile. *Bristol.*

Contains 4 sections, to same scale, through the town, copied (enlarged) from those previously published by Mr. Sanders. The map is copied from Mr. Sanders's map of the Bristol Coalfield. E. B. T.

Bristol Coalfield. Map of the Bristol Coalfield and country adjacent. Scale an inch to a mile. By **W. Sanders.** Ed. 2. *Bristol.*

Reduced from the larger map (published some years ago). Extends from Berkeley on the N. to Wells on the S., including about 720 square miles. E. B. T.

Corrèze, Atlas topographique, agricole et géologique du département de la. Canton de Juillac et de Vigeois.—Canton de Pornac.—Cantons de Beynat et de Meyssac.—Cantons de Donzenac et d'Azen. [Topographical, Agricultural, and Geological Atlas of the Corrèze. 7 Cantons in 4.] By — **Mea.** *Paris.*

Dumbarton. Sheet 25 of the *Geological Survey Map*. Scale 6 inches to a mile. By **B. N. Peach** and **R. L. Jack.** (Condorrat, Twechar, and E. part of Kirkintilloch.)

Carboniferous Limestone and Millstone Grit. In the former, outcrops of limestones, coals, and ironstones. Intrusive Basalt-rocks in sheets, and E. and W. Tertiary dykes. Boulder Clay, Sands and Gravels, Silted-up lakelets, Peat bogs. R. L. J.

Durham. 7 Sheets of the *Geological Survey Map*. Scale 6 inches to a mile.

Sheet xvi. Hunstanworth. By **David Burns.** Alluvium; Boulder Clay; Millstone Grit (2 grits and shale); Yoredale Rocks (9 or 10 divisions, of shale, limestone, &c., with 2 beds of coal); many mineral veins (lead and iron).

Sheet xxiv. Stanhope. By **David Burns.** Alluvium; Old River Gravel (2 terraces); Glacial Gravel and Boulder Clay; L. Coal Measures; Millstone Grit (3 grits, 2 shales); Yoredale Rocks (sandstones and shales, with 5 limestones); Basalt; Mineral veins (lead and iron).

Sheet xxxii. Five Pikes, etc. By **David Burns.** Alluvium; Old River Gravel (2 terraces); Glacial Gravel and Boulder Clay; Lower Coal Measures; Millstone Grit (3 grits, 2 shales); Yoredale Rocks (sandstones and shales, with 6 limestones); Mineral veins (lead, iron, and copper).

Sheet xxxiii. Hamsterley, Witton-le-Wear. By **H. H. Howell.** Alluvium; River Gravel; Glacial Gravel and Boulder Clay; M. and L. Coal Measures (with outcrops of coals); Millstone Grit (3 grits, 2 shales); Yoredale Rocks (with Fell-top Limestone); Basalt.

Sheet xxxiv. Willington, Byers Green. By **H. H. Howell.** Alluvium, Old River Gravel; Glacial Sand and Gravel; Boulder Clay; Magnesian Limestone; M. and L. Coal Measures (with outcrops of coal); Basalt.

Sheet xli. Cockfield, etc. By **H. H. Howell.** Alluvium; Gravel and Boulder Clay; M. and L. Coal Measures (with outcrops of coals); Millstone Grit (3 grits, 2 shales); Yoredale Beds; Basalt.

Sheet xlii. Bishop Auckland, West Auckland, New Shildon. By **H. H. Howell.** Alluvium; Gravel and Boulder Clay; Permian (Magnesian Limestone and Yellow Sand); M. and L. Coal Measures (with outcrops of coals); Basalt. W. W.

England and Wales. 3 Sheets of the *Geological Survey Map*. Scale an inch to a mile.

Sheet 18. New Edition. By **H. W. Bristow, H. B. Woodward,** and **W. A. E. Ussher.** The new points are the results of a re-survey of the N.W. corner, including the addition of the Penarth Beds and Gravel, besides a revision of Alluvium-lines.

Sheet 82, N.E. (Worksop, Bawtry.) New Edition. By **A. H. Green** and **T. V. Holmes.** With corrections of the Carboniferous part at the W. edge.

Sheet 101, S.E. (Keswick; Skiddaw, Helvellyn; Crumnock Water, Derwent Water, &c.) By **J. C. Ward.** Alluvium, Carbonife Limestone, U. Old Red, L. Silurian (Volcanic series, in 3 divisi Skiddaw series, in 7 divisions), Granite, Syenite, Felstone, Dio Dolerite, &c. Many Mineral Veins and Faults. W.

England and Wales. 14 Sheets of the "Horizontal Sections" the *Geological Survey*. Scale 6 inches to a mile.

Sheet 91. By [**Prof.**] **A. H. Green.** No. 1. Section from the up part of the valley of the River Derwent to the centre of the Yorksl Coal-field, across the Yoredale Rocks, and Millstone Grit of Broomh and Whitwell Moors, the Lower Coal Measures of Stockbridge Wortley, the Middle Coal Measures of Stainborough, ... terminat on Houghton Common. No. 2. Section from S.W. to N.E. across Yorkshire Coal-basin, crossing the Lower Coal Measures of Hoyla the Middle Coal Measures of Silkstone . . . . and terminating Newton Colliery near Castleford.

Many divisions of M. and L. Coal Measures, Millstone Grit, Yoredale Rocks are shown, mostly to a depth of 1000 feet bel sea-level.

Sheet 95. Section from the North-western corner of the Yorksh Coal-field south of Bingley, across the Lower Coal-measures of Hill . . . . and Oakenshaw near Bradford; the Middle Coal-measu of Cleckheaton, ... Clayton in the Clay near Barnsley; thence over the Permian Rocks . . . . to the neighbourhood of D caster. By [**Prof.**] **A. H. Green, R. Russell,** and **C. F. Strangway**

Shows 4 divisions of the Permian, and various divisions of Carbo ferous rocks, mostly to a depth of 1000 feet below sea-level.

Sheet 97. Section from the Valley of the Wharfe at Otley, o the Millstone Grit of The Chevin, the outlier of Lower Coal-measure Rawdon, and the Millstone Grit of Horsforth and Bramley Fall; the across the Yorkshire Coal-field by Bramley, ... the neighbourh of Wakefield, ... and Denaby, to the Magnesian Limestone n Conisborough. By [**Prof.**] **A. H. Green, J. C. Ward, J. Lucas,** and **Russell.**

Many divisions of the Coal Measures and Millstone Grit are sho mostly to 1000 feet below sea-level.

Sheet 101. Section from the Millstone Grit, of Blackstone Edge n Todmorden, Greetland Moor, and North Dean, south of Halifax, c the Lower Coal Measures of Southowram, Brighouse and Clifton; Middle Coal Measures of Cleckheaton, Gomersall, Adwalton, and Gil some; the Lower Coal Measures of Gildersome, Churwell, and Beest the Middle Coal Measures, of Hunslet, Osmondthorpe, and Manst the Lower Coal Measures of Scholes; and thence over the Magne Limestone of Barwick in-Elmet, Bramham Moor, and Newton Kyme the Alluvial Flat of the river Wharfe. By **W. T. Aveline, J. Dakyns, J. C. Ward,** and **R. Russell.**

Sheet 102. (Dated 1874? not published until 1875.) Section fr Heptonstall Moors north of Todmorden, across the Millstone Grit of basin of the Calder, the outliers of the Lower Coal-measures at Denholme and Bailden, the Millstone Grit of Otley Chevin and Wharfedale, and the Yoredale Rocks of Harrogate Anticlinal, on to the Magnesian Limestone of the neighbourhood of Knaresborough. By **J. R. Dakyns, J. Lucas, C. F. Strangways**, and **W. H. Dalton.**

Sheet 103. Section across the Northern part of the Somersetshire Coal-field, from Broadfield Down, by Chew Magna, Stanton Wick, Pensford, Marksbury, and Newton St. Loe, to Tiverton near Bath. By **John Anstie** and **H. B. Woodward.** [Dated 1874, but not issued until 1875.]

Shows horizontal beds, from the L. Lias to the Dolomitic Conglomerate, unconformably over the Carboniferous Series. Carried to a depth of 3000 feet below the sea-level, with indications of the position of the Coal Measures to a further depth of 5000 feet.

Sheet 104. Section across the Somersetshire Coal-field from Chewton Mendip, by Farrington Gurney, Paulton, Camerton, and Dunkerton, to Combe Down, near Bath. By **John Anstie** and **H. B. Woodward.**

Shows nearly horizontal beds, from the Gt. Oolite to the Dolomitic Conglomerate, resting unconformably on the Carboniferous Series. Carried to a depth of 3000 feet below the sea-level, with indications of the probable position of the Coal Measures to a further depth of about 5000 feet.

Sheet 105. Section across the Southern part of the Somersetshire Coal-field from the Mendip Hills, near Binegar, by Stratton on the Fosse, Midsummer Norton, Radstock, Clandown, Braysdown, and Foxcote, to Norton St. Philip. By **John Anstie** and **H. B. Woodward.**

Shows nearly horizontal beds, from the Forest Marble to the Dolomitic Conglomerate, resting unconformably on the Carboniferous Series. Carried to a depth of 3000 feet below the sea-level, with indications of the probable position of the Coal Measures to a further depth of 4000 or 5000 feet.

Sheet 106. Section from near Kingston Seymour Somersetshire, across Ken Moor, through Nailsea, Flax Bourton, and Bedminster, passing on the S.E. of Bristol, through St. Georges, and the Bristol Coal-field, to the Fish Ponds in Gloucestershire. By **John Anstie** and **H. B. Woodward.**

Shows Penarth Beds, Keuper Marl, and Dolomitic Conglomerate, nearly horizontal and resting unconformably on the Carboniferous Series. Carried to a depth of 3000 feet below the sea-level.

Sheet 107. Section from Portskewet in Monmouthshire, across the River Severn at New Passage, by Stoke Gifford in Gloucestershire, across the Bristol Coal-field through Westerleigh, to Wapley. By **John Anstie** and **H. B. Woodward.**

Shows nearly horizontal beds, from the L. Lias to the Dolomitic Conglomerate, resting unconformably on the Carboniferous Series. Partly carried to a depth of 3000 feet below the sea-level, with still deeper indications of the position of the Coal Measures.

Sheet 108. Section from Great Swinburn and Colwell, Northumberland, across the Carboniferous Limestone, Millstone Grit, and Northumberland and Durham Coal-field; through Bingfield, G Whittington, Halton Shields, Newton Hall, Bearl, Mickley, He Woodside, Chopwell, Tanfield, Kibblesworth, Great Usworth, Hedw and Harton; thence across the Magnesian Limestone to the coa miles north of Whitburn. By **H. H. Howell.**

Shows Alluvium; Boulder Clay, Magnesian Limestone and Sand and L. Coal Measures, Millstone Grit, Carboniferous Limestone Se and Basalt (Whin Sill). Probable position of Coal Measures marke a depth of about 2000 feet below the sea-level.

Sheet 110. Section from Byerhope Head . . . . across the Y dale Rocks, Millstone Grit, and the Durham Coal-field, through . . the Derwent Lead Mines . . . . and . . . . the Magnesian Limest . . . . to the Coast, 3 miles south of Sunderland. By **H. H. Ho** and **D. Burns.**

The first part shows the intrusive basalt of the Whin Sill; and last part is carried below the sea-level.

Sheet 111. Section across the Bristol Coal-field and the North of the Somersetshire Coal-field, from Cromhall at the North . . . Keynsham and Compton Dando. By **John Anstie** and **H. B. Woodw**

Lias, Penarth Beds, Keuper Marl, Dolomitic Conglomerate, Carb ferous beds (6 divisions), and Old Red Sandstone are shown, to a de of 3000 feet below the surface.

Sheet 112. Section across the Somersetshire Coal-field from Hou street on the North, through . . . . Radstock . . . . the East of the Mendip Hills at Whatley, to . . . . Maiden Bradley. By **J Anstie** and **H. B. Woodward.**

Shows Cretaceous beds, Jurassic (7 divisions), Penarth Beds, Keu Marl, Dolomitic Conglomerate, Carboniferous beds (6 divisions), Old Red Sandstone. The first half carried to 3000 feet below surface. W.

England and Wales. Sheet 55 of the Vertical Sections of the *logical Survey.* Sections of the Northumberland Coal-field betw the rivers Coquet & Lyne. By **W. Topley.**

13 sections, with an index-map showing their positions. Scale feet to an inch.

Europe. [Geological Map of]. By **Staff Captain Hennequin.** S 1 : 8,000,000. *Brussels.*

The divisions shown are:—Granitic, Porphyritic, Volcanic, Crys line schists, Cambrian, Silurian, Upper, Middle, and Lower Devoni Upper, Middle, and Lower Carboniferous, Permian, Trias, Lias, Jura proper (*i. e.* Bath, Oxford, and Portland Oolites), Cretaceous, Eoce Miocene, Pliocene, Mud-volcanoes, and Quaternary and Recent. projection adopted is that of Flamsteed modified. The centre of map is in lat. 43° N., long. 20° E. of Paris. E. de Beaumont's syst of mountains is recognized in a limited degree. G. A.

France, Carte minérale de la. *Lyon.*

Ireland. 5 Sheets of the *Geological Survey Map*. Scale an inch to a mile.

Sheet 35. By **E. T. Hardman.** Parts of Tyrone, Derry, Armagh, and Antrim (Dungannon, Coalisland, Stewartstown), including the country on the S.W. quarter of Lough Neagh. *Formations*:—Fresh-water shingle; Alluvium; Peat; Drift; Pliocene Clays (ancient Delta of Lough Neagh); Miocene Basalts in sheets and dykes; Chalk; Keuper Marl; U. Bunter Sandstone; Permian (Zechstein); Coal Measures, with coal-crops (Coal-fields of Annaghone and Dungannon); Millstone Grit; Yoredale Beds; Carboniferous Limestone, 3 divisions.

Sheet 59. By **F. W. Egan.** Parts of the Counties Armagh and Monaghan, with small portions of Down and Louth (Castle Claney, Newtown Hamilton, Keady Carnlough). Includes the hill country around Slieve Gullion. *Formations*:—Peat; Alluvium; Drift; L. Silurian, with metamorphosed beds; Basalt (Tertiary); Older Basalt and Dolerite; Diorite; Felstone-porphyry; Mica-trap; Volcanic Agglomerate, Palæozoic; Elvanite; Granite; Syenitic granite. Some extensive dykes, Lodes of Copper and Lead, Glacial Markings, &c. are shown. The Igneous rocks in the neighbourhood of Slieve Gullion are extremely varied; and these also enter into Sheet 70, which forms the southern continuation of the district. (See below.)

Sheet 66. By **F. J. Foot** and **R. J. Cruise.** Includes part of Sligo and Roscommon, with small portions of Leitrim and Mayo (Balymote and Boyle). *Formations*:—Alluvium; Peat; Drift; L. Coal Measures; Millstone Grit, with coal-seams (part of Connaught coal-district); Yoredale Beds; Carboniferous Limestone, 4 divisions; Old Red Sandstone; Melaphyre; Diorite; Felstone; Felspathic ash; all more recent than the Old Red Sandstone. Coal-crops, ironstone-deposits, and glacial markings are shown.

Sheet 70. By **J. Nolan.** Parts of Armagh, Monaghan, and Louth (Dundalk, Carrickmacross, Crossmaglen, Louth), includes the country west of Dundalk Bay, with the hill country south of Slieve Gullion, composed of a variety of igneous rocks. *Formations*:—Bog; Alluvium; Raised Beach; Drift; Keuper Marls; Bunter Sandstone; Coal Measures; Carboniferous Limestone, 3 divisions; L. Silurian, partly metamorphosed; Basalt and Dolerite, Palæozoic; Diorite; Mica-trap; Felstone and Felstone-porpyhry; Volcanic Agglomerate (Palæozoic); Elvanite; Granite. A few lodes of Copper and Lead, glacial markings, and many faults and dykes are shown.

Sheet 112. By **W. L. Willson, G. V. Du Noyer,** and **A. Wylie.** Revised by **R. J. Cruise.** Part of the County Dublin (Dublin, Kingstown, Howth and Ireland's Eye, Killiney, Chapelizod). Includes the country about Dublin Bay and west of it, with part of the Dublin mountains (Granite) to the south. *Formations*:—Alluvium; Raised Beach; Drift; Carboniferous Limestone, 3 divisions; L. Silurian; Altered Silurian; Cambrian, occupying the greater part of the peninsula of Howth. *Igneous Rocks*:—Felstone-porphyry; Basalt (Palæozoic); and Granite, forming the Dublin range. Glacial markings are shown. E. T. H.

Kief. [Geological Maps of the Town and Government of.] By **Téoflactoff.**

Lanarkshire. Sheet 13 of the *Geological Survey Map*. Scale 6 inches to a mile. By **J. Geikie.** (Shotts Iron Works and Stane Village.)

Carboniferous Limestone Series, Millstone Grit and Coal Measures (chiefly the latter), with outcrops of coals and ironstones. In the moorlands S. of Stane the coal-outcrops are marked diagrammatically to indicate the supposed structure of the unworked portion of the coal-field. Boulder Clay, Sand and Gravel, and Peat Bogs shown. R. L. J.

Lancashire. 3 Sheets of the *Geological Survey Map*. Scale 6 inches to a mile.

Sheet 61. (Preston.) By **R. H. Tiddeman** and **C. E. DeRance.** Freshwater Deposits (Alluvial, 4 divisions), Glacial Deposits (3 divisions), New Red Sandstone, Permian Sandstone, Lower Coal Measures, Millstone Grit (in 7 divisions of grits and shales).

Sheet 69. (Leyland, Brindle.) By **R. H. Tiddeman** and **C. E. DeRance.** Alluvium (3 divisions), Glacial Deposits (3 divisions), New Red Sandstone (2 divisions), Permian, L. Coal Measures, Millstone Grit (7 divisions of grits and shales).

Sheet 77. New Ed. (Chorley, Eccleston.) By **Prof. E. Hull, R. H. Tiddeman,** and **C. E. DeRance.** Alluvium, Glacial Deposits (3 divisions), New Red Sandstone (2 divisions), Permian, M. and L. Coal Measures, Millstone Grit (2 divisions). W. W.

Llano County, U. S. A. Showing Geology Mineral Localities &c. By **Dr. A. R. Roessler.** About 2 miles to an inch. *New York.*

The divisions shown are:—1. Granitic Metamorphic and Igneous; 2. Potsdam Sandstone (L. Silurian); 3. Carboniferous Conglomerate.

Montana and **Wyoming Territories.** Embracing most of the country drained by the Madison, Galantin and Upper Yellowstone Rivers. U.S. Geological Survey of the Territories. Scale 4 miles to an inch. By **F. V. Hayden** and **A. C. Peale.**

The formations shown by distinctive colours are:—Granite, Silurian, Carboniferous, Jurassic and Triassic, Cretaceous, Lignitic, Lacustrine, Fluviatile, Volcanic. Includes the Yellowstone National Park. The surface-features are shown by means of contour-lines. W. W.

Newfoundland. Map showing the distribution of the Silurian and Carboniferous Formations &c. in St. George's and Port à Port Bays. By **Alex. Murray** and **J. P. Howley**, 1873–4 (? published 1875). Scale 4 miles to an inch. *Montreal.*

Shows 5 divisions of Carboniferous rocks, 6 of L. Silurian, 2 of Laurentian, and Trap. There is a section, on the scale of an inch to a mile (vertical and horizontal), from Robinson's Head south-eastward.

W. W.

——. [A small sheet of 4 Sections, without Title.]

2 sections on a scale of an inch to a mile, and 2 on a scale of 6 inches to a mile.

Newfoundland. Map of Gander River and Lake. By **A. Murray.** 1874 (? published 1875). Scale 4 miles to an inch.

Though not a geological map, it has some geological notes.

New South Wales, The Upper Coal Measures of. By **John Mackenzie.** Not dated (? published in 1875). Scale 30 feet to an inch. See p. 157.

A, at Newcastle, County of Northumberland; B, at the Wallsend Colliery, near Newcastle, County of Northumberland; C, at the Wolgan, County of Cook; D, at Lithgow Valley, County of Cook; E, at Burragorang, near the junction of the Burragorang and Cox's Rivers, in the County of Cook; F, on the Nattai River, near the Fitzroy Iron Mines, in the County of Camden; G, at Kangaroo Creek, in the County of Camden; H, at Mount Keira, near Wollongong, County of Camden; I, about 4 miles south-west of Coal Cliff, in the Parish of Southend, County of Cumberland; J, at Coal Cliff, Parish of Southend, County of Camden. These sections are on 5 sheets, 2 sections to each sheet.
W. W.

Northumberland. 3 Sheets of the *Geological Survey Map.* Scale 6 inches to a mile.

Sheet lxiii. By **W. Topley.** (Mitford, Hartburn, Stanton.) The beds shown are Alluvium, River Gravel, Boulder Clay, Glacial Gravels, Millstone Grit and Carboniferous Limestone Series, with included limestones and coals. Whin dykes and faults.
W. T.

Sheet ci. By **D. Burns.** (Coanwood Common, Whitfield Moor, &c.) Alluvium, Old River Gravel, Glacial Gravel, and Boulder Clay, M. and L. Coal Measures, Millstone Grit (3 divisions), Yoredale Rocks (with 4 imestones).

Sheet cvii. By **D. Burns.** (Allendale Common &c.) Alluvium, Old River Gravel, Glacial Gravel and Boulder Clay, Millstone Grit (3 grits, 2 shales), Yoredale Rocks (with 5 limestones, coals, and firestone).
W. W.

Prussia. Geologische Karte von Preussen und den Thüringischen Staaten. Scale 1 : 25000. By **E. Weiss.** 7 sheets.

Bde. ii, Bl. 3. Lauterbach. Alluvium (2 divisions), Diluvium (2 divisions), Buntsandstein (2 divisions).

Bde. ii, Bl. 4. Emmersweiler. Alluvium, Diluvium, Muschelkalk, Buntsandstein (3 divisions).

Bde. ii, Bl. 5. Hanweiler. Alluvium (3 divisions), Diluvium (2 divisions), Muschelkalk (8 divisions), Buntsandstein (2 divisions).

Bde. iii, Bl. 2. Ittersdorf. Diluvium, Muschelkalk (6 divisions), Buntsandstein (2 divisions).

Bde. iii, Bl. 3. Bouss. Alluvium (4 divisions), Diluvium (2 divisions), Muschelkalk (6 divisions), Buntsandstein (3 divisions), U. Coal-formation (6 divisions). [? 2 Editions.]

Bde. iii, Bl. 4. Saarbrücken. Alluvium (2 divisions), Diluvium (2 divisions), L. Muschelkalk, Buntsandstein (3 divisions), U. gende, U. Coal-formation (7 divisions). [? 2 Editions.]

Bde. iii, Bl. 5. Dudweiler. Melaphyr ?, Alluvium (3 di Diluvium (2 divisions), Muschelkalk (5 divisions), Buntsand divisions), U. Coal-formation (3 divisions). [? 2 Editions.]

Prussia. Geologische Karte der Provinz Preussen. 1 : 1 Sekt. 17 : Gumbinnen-Goldapp. By **Prof. Berendt.** *Ber*

Renfrewshire. 4 Sheets of the *Geological Survey Map.* inches to a mile.

Sheet 7. By **R. L. Jack.** (Kilmalcolm, Bishopston, and B Weir.) Bedded Porphyrites (L. Carboniferous). Carboniferou stone Series, with outcrops of lower limestones, coals, ironsto oil-shales. Intrusive Melaphyres. Two large E. and W. Tertiary dykes. Boulder Clay, Kaimes, Brick-clays with boreal and arcti Eroded Terraces and Raised Beaches, Peat Bogs. Numerous ar marked Glacial striæ. Many little rock-basins silted up.

Sheet 8 (including Sheet 9). By **E. Hull** and **R. L. Jack.** (and N. Suburbs of Paisley.) Carboniferous Limestone Series, wi crops of limestones, coals, ironstones, and oil-shales. Intrusive including two large E. and W. Tertiary dykes. Boulder Clay, Sa Gravel, the Paisley Brick-clays with boreal and arctic shells. Beaches and Eroded Terraces.

Sheet 11. By **R. L. Jack.** (Johnstone, Kilbarchan, and Lo noch.) Bedded porphyrites and tuffs (L. Carboniferous). Carbon Limestone Series, with outcrops of limestones, coals, ironstones, shales. Below the Main Limestone is a great development of sand with the thick coals of Quarrelton (over 30 feet). Intrusive B Sheets, and Tertiary dykes. Copper-vein at Kaim in Por "country" alongside a Dolerite dyke.

Sheet 12. By **E. Hull** and **R. L. Jack.** (Paisley, Barrhea Nitshill.) Bedded porphyrites and tuffs (Gleniffer Braes ; L. C ferous). Carboniferous Limestone Series, with outcrops of coals stones, and oil-shales. (Quarrelton Coals, see Sheet 11, thinni eastward, and the associated sandstones thickening.) Millstone G E. of Barrhill, resting on the Hydraulic Limestone of Arden. In Basalt in sheets and dykes. Boulder Clay, Sand and Gravel, St Brick-clay with boreal and arctic shells, Raised Beaches and Terraces.

Rhenish-Westphalia. Übersichtskarte des rheinisch-westfäl Kohlen-Industrie-Reviers. [General Map of the Rhenish-phalian Coal District.] *Elberfeld.*

Shows the position of the coal-pits.

Scotland. 2 Sheets of the *Geological Survey Map.* Scale an i a mile.

Sheet 9. By **A. Geikie, H. M. Skae, C. R. Campbell,** and **J.**

Parts of Dumfriesshire and Kirkcudbrightshire, with the lower parts of the basins of the Nith and the Ken.

Comprises the following rock-formations:—*Aqueous*: L. Silurian (Llandeilo and Caradoc), Calciferous Sandstone, Permian, Drift, Raised Beach, Peat, Alluvium. *Igneous*: Porphyrites in Permian beds, Granite, Intrusive Felstones, Syenites, Diorites, and Basalt. The Silurian rocks occupy three fourths of the map. The Permian basins of Dumfries and Thornhill, portions of which are here represented, lie in the valley of the Nith. Small patches of the masses of Galloway Granite are also shown, along with the associated metamorphic rocks. Glacial striæ abundant, "drums" of till well-marked. J. H.

Sheet 31. By **A. Geikie, E. Hull, J. Geikie, B. N. Peach,** and **R. L. Jack.** L. Carboniferous bedded Porphyrites and tuffs of Campsie Hills, with some of the volcanic orifices filled up with Agglomerate; Bedded basalts and tuffs of same age at Bathgate; Carboniferous Limestone series, with ironstones of Kilsyth; Millstone Grit; Coal Measures, with the valuable coals and ironstones of Grangemouth, Falkirk, Airdrie, Wishaw, and Glasgow; unconformable Red Sandstones overlying Coal Measures; Intrusive Basalts in sheets and dykes, the latter remarkably persistent; old stream-courses below Boulder Clay; Raised Beaches and Eroded Terraces; Peat and Alluvium; many silted-up lakelets. R. L. J.

Snake River. Map of the Sources of Snake River with its Tributaries, together with Portions of the Headwaters of the Madison and Yellowstone. *U.S. Geological Survey of the Territories.* Scale 1 : 316,800, or 5 miles to an inch. The Geology by **F. H. Bradley.**

The formations shown by colours are:—Archæan, Potsdam, Quebec, Niagara, Carboniferous, Triassic, Jurassic, Tertiary, Volcanic Tertiary, and Quaternary. There are profiles (outlines) of the mountain-ranges, the chief being that of the Tetons. W. W.

Stirlingshire. 10 Sheets of the *Geological Survey Map.* Scale 6 inches to a mile.

Sheet 17. By **B. N. Peach.** (Stirling and Bannockburn.) L. Carboniferous or Calciferous Sandstone Series (Red Sandstone and Cement Stone Groups); Bedded Porphyrites (E. end of Campsie Hills); Carboniferous Limestone Series, with outcrops of coals and limestones; Intrusive Basalt in sheets (Gillies Hill), whose position (above the Harlet limestone) formerly gave rise to misconceptions regarding the age of the traps of the Campsie Hills; Boulder Clay, Kaimes, Sands, Gravels, and clays of the 100 feet Raised Beach, Raised Beach of the Stirling "carse."

Sheet 18. By **B. N. Peach.** (S. Alloa, Dunmore, and Airth.) Carboniferous Limestone Series, with outcrops of limestones, and coals, Millstone Grit, Coal Measures, with outcrop of coals at Dunmore; Boulder Clay, Kaimes, Clays, &c. of 100 feet Raised Beach; Raised Beach of "carse" of Stirling, and Recent Estuary Mud of the Forth.

Sheet 23. By **B. N. Peach.** (Loch Coulter and Denny). South extension of Sheet 17 (see above), with similar geological feat Part of the E. and W. Tertiary Basalt dyke traceable across Scot from Helensburgh to Grangemouth, occasionally occupying line fault.

Sheet 24. By **B. N. Peach.** (Hill of Airth, Larbert, Carron, Falkirk Ironworks.) Carboniferous Limestone Series, with outcrop coals, &c.; Millstone Grit and Coal Measures, with crops of coals. miles of the large fault above referred to (see Sheet 23); Boulder C Kaimes, Clays, &c. of the 100 feet Raised Beach, Newer Raised Be between Carron and the Forth; Peat Bog of Lettan.

Sheet 25. By **B. N. Peach.** (Grangemouth.) Millstone Grit Coal Measures, with coal outcrops under Raised Beach and Re Estuary Mud of the Forth. E. end of the large dyke above referre (see Sheets 23, 24).

Sheet 27. By **R. L. Jack.** (Strathblane, Mugdock Reserv Clachan of Campsie, Lennox Castle.) Calciferous Sandstone, Sandstone and Cement-stone groups (Ballagan Beds), the latter pass under the bedded porphyrites of the Campsie Hills. Conglomer base of the Carboniferous Limestone Series, resting on the foregoi Basin of the Harlet and Hosie Limestones and Coals; "Necks" volcanic agglomerate of Calciferous Sandstone age. Intrusive Ba in sheets; E. and W. Tertiary dykes, including 5 miles of the d above mentioned (Sheets 23, 24, and 25). Boulder Clay, Sand, Gravel. Glacial striæ well-marked.

Sheet 28. By **B. N. Peach** and **R. L. Jack.** (Lennox, Kilsy Calciferous Sandstone Series, Red Sandstone and Cement Stone Gro with base of the contemporaneous porphyrites and ashes of the Cam Hills. The whole of the Carboniferous Limestone Series, with outcr of limestones, coals, and ironstones; Intrusive Felstone and Basal sheets and dykes, including part of the dyke above referred to (She 23, 24, 25, 27); Boulder Clay; Sand and Gravel; Alluvium of Kelvin Haughs; Peat Bogs.

Sheet 32. By **R. L. Jack.** (Milngavie, Balmore, Torrance Campsie.) Top of Bedded Traps of Campsie Hills. Gritty and C glomeratic base of Carboniferous Limestone Series, with outcrops limestones and coals, and fault with downthrow of 100 fathoms; M stone Grit; Intrusive Sheets of Basalt; Boulder Clay; Sand and Grav Alluvium; line of very deep Drifts, supposed to be a buried river-chan

Sheet 33. By **R. L. Jack.** (Balquarrage, Inchbelly.) Carbo ferous Limestone Series, with outcrops of limestone and coals; Mi stone Grit; Boulder Clay; Sand and Gravel; Alluvium.

Sheet 35 (including Sheet 34). By **B. N. Peach.** (Slamannan, Av Bridge.) Coal Measures, with crops of numerous coal-seams; Intrus Basalt in sheets and (Tertiary) dykes; Boulder Clay; Sand and Grav Alluvium of River Avon; Peat Bogs.

[Sheets 29, 30, 31, returned as published, were not really out of engraver's hands.] R. L.

Sweden. Sveriges geologiska undersökning. [Swedish Geological Survey Map.] 3 sheets. Scale 1 : 50,000. *Stockholm.*

No. 54. Riseberga. By **A. Blomberg, G. A. Carlsson**, and **V. Öberg**, under the direction of **M. Stolpe**. The formations are :—Postglacial (5 divisions), Glacial (3 divisions), Silurian limestone, Alum-schists with nodules of swinestone, Cambrian sandstone, Granular limestone, Red Gneiss, and Granite. Deposits of iron-ore are shown.

No. 55. Latorp. By **G. Linnarsson** and **G. Gellerstedt**. The formations are :—Postglacial (6 divisions), Glacial (2 divisions), Silurian limestone, Alum-schists with layers and nodules of swinestone, Cambrian sandstone, Granular limestone, "Hälleflinta" [= Felsite-schist], Mica-schist and Eurite, Garnet-gneiss, Grey and Red Gneiss, Diorite, Diabase and Hyperite, and Granite. Deposits of iron-ore are shown.

No. 56. Nora. By **O. Gumælius, T. Nordström**, and **S. Tenow**. The formations are :—Postglacial (6 divisions), Glacial (3 divisions), "Hälleflinta," Granular limestone, Mica-schist and Eurite, Hornblende-eurite, Red and Grey Gneiss, Hyperite and Diabase, Diorite, Granite, and Pegmatite. Deposits of silver, copper, and iron-ores (including bog-ore) are shown. G. A. L.

Switzerland. (*Commission Géologique.*) 2 Sheets of the Federal Atlas. Scale 1 : 100,000.

Sheet iii, by **Moesch, — Stulz, — Merian**, and **— Vogelsang.**

Sheet ix, Schwyz, Glarus, Appenzell, Sargans, by **— Escher v. d. Linth, — Gutzwiller, — Moesch**, and **— Kaufmann.**

Contains the Wallensee and part of the Lake of Zurich. 40 different divisions are shown, from Recent beds, through Quaternary, Molasse, Nummulitic, Cretaceous (many divisions), Jurassic, Liassic, to Triassic. Synclinal and anticlinal lines are shown by coloured lines. Moraines, &c. are marked. W. W. and G. A. L.

United States. Map of the 40th Parallel Survey.—No. II. By **Clarence King** and **S. F. Emmons.** Scale 2 miles to an inch ?

Covers the Green River Basin and most of the Uinta Mountains (from note in *Amer. Journ.* ser. 3, vol. xi. p. 161).

Valais. Carte Géologique des Alpes Vaudoises. Scale 1 : 500,000. By **Prof. E. Renevier.** (*Swiss Commission Géologique.*)

World. Geological Map of. By **Jules Marcou.** Ed. 2. Scale 1 : 23,000,000. *Zurich.*

In 8 sheets. The divisions shown by colours are :—Modern rocks, Tertiary rocks, Secondary rocks (Cretaceous and Jurassic), New red sandstone rocks, Carboniferous rocks, Palæozoic rocks, Crystalline rocks, and Volcanic rocks. There is also an Explanation (see p. 377). W. W.

Yorkshire. 17 Sheets of the *Geological Survey Map*. Scale 6 inches to a mile.

Sheet 100. By **J. Lucas.** (Masham Moor, Ilton cum Pott.) Post Glacial Beds (3 divisions), Glacial Deposits (2 divisions), Millstone Grit (many divisions; grits, sandstones, and shales); Yoredale Rocks (limestone); a few lead-veins.

Sheet 216. By **J. C. Ward, J. Lucas, C. F. Stangways,** and **R. Russell.** (Bradford, Low Moor, Shelf, Thornton.) Alluvium, Boulder Clay, L. Coal Measures (with many faults, coal-outcrops, and 8 beds of sandstone, etc.), Millstone Grit.

Sheet 217. By **J. C. Ward, J. Lucas,** and **R. Russell.** (E. edge of Bradford, Pudsey.) Alluvium, Boulder Clay, M. and L. Coal Measures (with many faults, coal-outcrops, beds of sandstone, etc.)

Sheet 218. By **J. C. Ward** and **R. Russell.** (Leeds, Hallon.) Alluvium (4 divisions), M. and L. Coal Measures (with many faults, coal-outcrops, and beds of sandstone and flagstones).

Sheet 248. By **A. H. Green.** (Wakefield, Osset, Horbury.) Alluvium (2 divisions), M. Coal Measures (with many faults, coal-outcrops, and beds of sandstone).

Sheet 249. By **W. T. Aveline, A. H. Green,** and **T. V. Holmes.** (Pontefract, Ackworth, Waimfield.) Alluvium, Boulder Beds, Permian (magnesian limestone), M. Coal Measures (with faults, coal-outcrops, and beds of rock).

Sheet 261. By **A. H. Green, J. C. Ward,** and **R. Russell.** (Kirkburton, Skelmanthorpe.) Alluvium, M. and L. Coal Measures (with faults, coal-outcrops, and beds of sandstone).

Sheet 263. By **A. H. Green.** (Hemsworth, Badworth, etc.) Alluvium, M. Coal Measures (with faults, coal-outcrops, and rock-beds).

Sheet 264. By **W. T. Aveline** and **A. H. Green.** (Norton, Askern, Elmsall.) Recent Deposits (3 divisions), Permian (2 limestones, 1 marl), Coal Measures.

Sheet 275. By **A. H. Green** and **R. Russell.** (Thurnscoe, Cudworth, Darfield.) Alluvium, Gravel, M. Coal Measures (with faults, coal-outcrops, and rock-beds).

Sheet 283. By **A. H. Green** and **R. Russell.** (Bolton and Wath upon Dearne, Swinton, Elsecar.) Alluvium, Boulder Clay, M. Coal Measures (with faults, coal-outcrops, and rock-beds).

Sheet 284. By **W. T. Aveline** and **A. H. Green.** (Mexbrough, Conisbrough, Waimsworth.) Alluvium (2 divisions), Estuary Deposits (sand and warp), Boulder Clay and Gravel, Bunter Sandstone, Permian (2 magnesian limestones, 1 marl), M. Coal Measures (with faults, coal-outcrops, and rock-beds).

Sheet 290. By **W. T. Aveline, A. H. Green,** and **T. V. Holmes.** (Ravenfield, Braithwell, Bramley, Maltby.) Permian (2 limestones, 1 marl), M. Coal Measures, with 2 beds of rock.

Sheet 295. **A. H. Green** and **T. V. Holmes.** (Attercliffe, Whiston, Woodhouse.) Alluvium (2 divisions), M. Coal Measures (with faults coal-outcrops, and rock-beds).

Sheet 296. By **W. T. Aveline, A. H. Green,** and **T. V. Holmes.** (Laughton, Brampton, North Anston.) Alluvium, Permian (2 limestones, 1 marl), M. Coal Measures (with coal-outcrops and 2 rock-beds).

Sheet 299. By **A. H. Green** and **T. V. Holmes.** (Wales Common.) Alluvium, M. and L. Coal Measures.

Sheet 300. By **W. T. Aveline, A. H. Green,** and **T. V. Holmes.** (Harthill, South Anston.) Alluvium, Permian (marl, magnesian limestone, and sand), M. Coal Measures (with coal-outcrops and "red rock").

W. W.

MISCELLANEOUS AND GENERAL.

Achiardi, D'. Bibliografia mineralogica, geologica e paleontologica della Toscana. [Mineralogical, Geological, and Palæontological Bibliography of Tuscany.] *Boll. R. Com. geol. Ital.* pp. 60, 61, 121-126.

Continued from last volume. See GEOLOGICAL RECORD for 1874, p. 351.

Acy, E. d'. Quelques observations sur la succession chronologique des types appelés généralement type de St. Acheul et type du Moustier. [Succession in Time of the St. Acheul and Moustier Types of Flint Implements.] *Mat. Hist. Homme*, sér. 2, t. vi. p. 281.

Adams, W. H. D. Beneath the Surface; or the Wonders of the Underground World.

Ameghino, Florentino. Nouveau débris de l'Homme et de son Industrie mêlés à des ossements d'animaux quaternaires recueillis auprès de Mercedes (République Argentine). *Journ. Zool.* vol. iv. pp. 527, 528.

At Mercedes, near Buenos Aires, human bones have been discovered, at a depth of 4 metres, in undisturbed Quaternary beds, mixed with burnt wood, earth, and bones, flint implements, also bones of about 15 species of mammals, mostly extinct. In some other places similar remains have been found beneath undisturbed Quaternary beds with bones of various mammals. E. T. N.

Anon. Berichte über die montanistischen Unterrichts-Anstalten für das Studienjahr 1874–75. [Report on the Educational Institutions for Mining &c. for the year 1874–75.] *Jahrb. k.-k. Bergakad.* pp. 368–395.

The calendar of the establishments associated in producing the volume. These are the Academy of Leoben and Přibram, and the mining schools of Přibram, Klagenfurt, and Wieliczka. The scheme of teaching &c. is given in detail. H. B.

——. General Index to the Second Series of the Journal of the Royal Agricultural Society of England. Vols. i. to x. Pp. 134. 8vo. *London.*

Contains references to much geological information.

——. Festkarte zur 58. Jahres-Versammlung der Schweizerischen naturforschenden Gesellschaft am 13. und 14. September 1875, in Andermatt. [Card of Admission to the Yearly Meeting of the Swiss Society of Naturalists for 1875 at Andermatt.] Woodcut.

The inner portion of this folding card contains two engravings to scale, representing sections of the rocks to be driven through by the St. Gothard Tunnel according to (i.) **Prof. Karl von Fritsch** and (ii.) **Prof. Giordano.** G. A. L.

Anon. Statutes of the Royal (Prussian) Territorial Geological Institute and Mining Academy. *Zeitsch. Berg-, Hütt.- Salinenw.* &c. vol. xxiii. p. 30.

——. Führer durch Elsass-Lothringen. [Guide through Alsace and Lorraine.] *Metz.*

Contains notices of mineral springs, erratic blocks, the Ensisheim meteorite, &c.

——. The Popular Encyclopedia. Half-vols. viii.-xi. Many plates. 8vo. *London.* See also *post*, Supplement for 1874.

Geological matter in many places. Mineralogy and Mining, vol. ix. pp. 239-257.

Appleton's American Cyclopædia. Vols. xi. and xii.

The articles Metal and Meteorites are by **Dr. T. Drown** and **Dr. R. W. Raymond**; Mineral Deposits by **Dr. J. S. Newberry**; Mercury and Mines by **Dr. Raymond**; Palæontology by **Prof. J. Hall**; Mountain by **Dr. T. S. Hunt.** From notice in *Amer. Journ.*

Bleicher, —. Note sur la présence de Stations Préhistoriques aux environs de Tlemcen (Algérie). *Journ. Zool.* vol. iv. pp. 14-18.

Contains an account of implements of the Saint Acheul type found in small caves near the Arab village of Ousidan, &c.

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Off No Sima Lighthouse, Yokohama, a bluish-grey clay in a concretionary state was brought up from 1875 fths. In the N. Pacific, lat. 34° 43′ N., long. 144° 2′ E., at 3950 fths., red clay was obtained. On July 2 the dredge brought up many pieces of pumice from a depth of 2050 fths., which appeared to be in a state of decomposition, and often coated and pervaded throughout with oxide of manganese. The red clay was full of round, oval, or mammillated lumps of peroxide of manganese. R. E., Jun.

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——. The Deep Sea, and its teachings. *Ibid.*
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A review of the author's claims of priority regarding the relation between the subsoil and the distribution of certain plants.

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Woodward, Henry. On the Dawn and Development of Life on the Earth. *Proc. Geol. Assoc.* vol. iv. no. 2, pp. 98–113. See GEOLOGICAL RECORD for 1874, p. 364.

Woodward, H. B. On Geological Boundary-lines. *Proc. Geol. Assoc.* vol. iv. no. 5, pp. 262–269.

A review of the difficulties which attend any system of geological classification, because of the variation in character of the beds and of the fauna they contain. Divisions between formations are in many cases less sharply marked than was formerly supposed. The conclusion is, that lithological boundary-lines, such as can be mapped, are generally best. Many divisions, palæontologically important, cannot be traced out on a map; such boundaries are liable to change with fresh discoveries; but a lithological boundary always holds good. W. T.

——. [Note describing a wooden image and a spear-head discovered in the valley gravel near Newton Abbot.] *Trans. Anthrop. Inst.* vol. v. pp. 299, 300.

Notes the characters of the gravels.

Wyman, Jeffries. Freshwater Shell Mounds of the St. John's River, Florida. *Mem. Peabody Ac. Sci.* vol. i. no. 4, pp. 1–94; 9 plates.

Amongst the conclusions are:—1. The shell heaps are the work of man; 2. They are composed of the remains of animals used as food; 5. They contain human bones, broken up in a manner suggestive of cannibal feasts; 6. They contain fragments of extinct animals, as mastodon, ox, &c.; 7. They have undergone destructive changes by river-action; 8. Their age may be approximately ascertained; 9. One human skull only has been found, differing from the skulls found in burial mounds; 10. The builders were probably not the same people as those found there by the Spaniards and French. R. B. N.

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Contains the following articles:—**Atlantic** and **Baltic** by **Dr. W. B. Carpenter.** **Baths** and **Black Sea** by **Dr. J. Macpherson.**

Repertorio delle Miniere. Leggi, Decreti, Regolamenti, Circolari, Atti diversi concernenti le sostanze minerali. [Mining Laws, &c.] Ser. 2, vol. i. pp. 333; vol. ii. pp. 556. 8vo. *Rome.*

ADDENDA.

Ackermann, —. [Yellowstone National Park.] *Sitz. Isis Dresden*, pp. 49–64.

Touches on the geological peculiarities of the district.

Adams, William. Pontypool and its Manufactures and Coal Fields. *Trans. Woolhope Nat. F. Club*, 1872, pp. 25–35.

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Anon. Kent's Cavern. *Chambers' Journal*, no. 615.

——. [Notes on the Channel Tunnel.] *Moniteur industriel Belge*, pp. 342, 350, 362, 383, 447, 558.

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——. New Coal Mines in Moravia. *Coll. Guard.* vol. xxix. p. 21.

On seams supposed to form a continuation of the Ostrau basin.

——. Excursion à Cassel. *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 383–387.

Details of M. Eocene beds.

——. Salt-pans of the Colony. *Cape Monthly Mag.* vol. xi. p. 288.

The pans are small depressions, mostly in large plains, and after heavy rains form small lakes. The soil is not salt; and after heavy rains the water in the pans is sweet. It is inferred that the source of the salt is deep-seated, and that the salt is brought to the surface by endosmosis, and deposited on the evaporation of the water. W. W.

Avignon, l'Abbé. Le val de la Dala. [The Dala Valley.] *Bull. Soc. Hist. Nat. Toulouse*, t. ix. pp. 184–191.

Describes the superficial deposits of this part of the Rhone basin.

Bachmann, Prof. Isidor. Mineralogische Plaudereien. [Mineralogical Items.] *Jahrb. Schweiz. Alpenclub*, Jahrg. x. pp. 602–621.

Bamber, H. K. [Analysis of the Minera Firestone.] *Trans. N. Eng. Inst. Min. Eng.* vol. xxiv. p. 154.

A medium-grained sandstone of the Millstone Grit of the Berwig Mountains near Wrexham.

Berendt, Prof. [Courses of Rivers in the North German Plains during the Diluvial Period.] *Schrift. phys.-oekon. Ges. Königsberg (Sitz.)*, Jahrg. 16, p. 22.

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The boring was through Carboniferous and Silurian rocks and granite. Specimens were collected every few feet. Detailed section of boring given, with a comparative view of geological formations in Missouri. Results of experiment with regard to temperature cited. The depth reached was 3843·5 feet. At 833 feet the drill (a 4½-inch drill) was observed to be highly magnetized. R. B. N.

Brown, A. J. Carboniferous Coal in Nevada. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 31–34.

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Brylinski. Les Phosphates de Chaux de la Caroline du Sud. [S. Carolina Phosphates of Lime.] *Bull. Soc. Géol. Norm.* t. ii. fasc. 2, pp. 3–74; 2 coloured diagrams.

Chap. i. gives the history of the discovery and use of phosphates; Chap. ii. describes the series (Cretaceous, Eocene, Miocene, Pliocene, and Quaternary) of the Charleston Basin. The phosphate-beds occur in the Post-Pliocene. Chap. iii. on the origin of the phosphatic nodules, suggests that they are pebbles of Eocene marl impregnated with phosphate of lime by contact with fæcal deposits of the Mammalia whose bones are associated with them in the Post Pliocene beds. Chap. iv. deals with the use of phosphatic manures, giving new and old analyses by many chemists. W. H. D.

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Cavalli, G. Note sul Bacino del Po in Piemonte, concernenti la disposizione geologica dello strato di pudinga sotto il quale fu trovata, nello scavo di un pozzo della casa del Barone Casana, una daga di rame primitivo, e sulle abbondanti acque provenienti dalle grandi masse dei ghiacciai alpini che scorrono sotto tale strato. [Basin of the Po, Piedmont.] *Atti R. Ac. Sci. Torino*, vol. xi. pp. 442–457.

Chellonneix, Émile. Note sur la colline de Mons-en-Barœoul et l'argile de Dieu-de-Marcq. [The Hill of Mons-en-Barœoul and the Clay of Dieu-de-Marcq.] *Ann. Soc. Géol. Nord*, t. ii. pp. 82–84.

Gives a section of clays and sands in a railway-cutting at the former place; the lowest bed belongs to the lower part of the Ostricourt sands (U. Landenian). The clay at Dieu-de-Marcq is a lenticular mass lying upon sands similar to those of Mons-en-Barœoul. 5 teeth of *Otodus* are recorded from this hitherto unfossiliferous deposit. G. A. L.

Chellonneix, Émile, and **Gustave Lecocq.** Note sur les environs de Tourcoing. [The Country round Tourcoing.] *Ann. Soc. Géol. Nord*, t. ii. pp. 123–127.

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Collins, J. H. Principles of Coal Mining. [Collins' Elementary Science Series.] Pp. 151; 139 woodcuts. 8vo. *London* and *Glasgow*.

Condon, Rev. Thomas. Preliminary Report of the State Geologist of Oregon. Pp. 22. *Salem*, *Oregon*.

Cope, Prof. E. D. Synopsis of the Vertebrata of the Miocene of Cumberland County, New Jersey. *Proc. Amer. Phil. Soc.* vol. xiv. pp. 361–364.

Enumerates 33 species, of which *Phasyanodus Gentryi*, *Sphyrænodus silovianus*, and *Agabelus* (n. gen.) *porcatus* are new. The last seems to be Cetacean. W. H. D.

Coryell, Martin. Eastern Virginian Coal-field. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 228–231.

The author's object is to induce more thorough investigation of a valuable coal-area. Sections of seams near the James River are given.

Darlet and **Toussaint.** Note sur une Brèche Osseuse de l'Époque Quaternaire. [Quaternary Osseous Breccia.] *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 587–590.

Describes a cave-deposit in Nièvre (Central France).

Dechen, H. von. Ueber den Quarzit bei Greifenstein im Kreise Wetzlar. [Quartzite of Greifenstein.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft iv. pp. 761–775.

F. Römer has described this quartzite as considerably older than the Coblentz Grauwacke (L. Devonian), and from the occurrence of *Pentamerus rhenanus* has referred it to the Silurian [see GEOLOGICAL RECORD for 1874, p. 93]. It has been mapped on the Wetzlar sheet of the large map of the Rhine Province and Westphalia as belonging to the Culm or L. Carboniferous group; and Von Dechen now defends this determination on stratigraphical grounds, maintaining that the occurrence of *Pentamerus* only shows that this genus has a higher range than palæontologists had previously recognized. F. W. R.

Dijk, P. van. Vijfde artesische putboring te Batavia. Put No. V. te Parapattan. [Fifth Artesian Boring in Batavia.] *Jaarb. Mijn. Ned. O.-Ind.* pp. 202–208.

Dijk, P. van. Nadere omschrijving van de buizing van **den artesischen** put No. V. te Parapattan (Batavia). [Further Description of Artesian Well No. 5.] *Jaarb. Mijn. Ned. O.-Ind.* pp. 208-215, with plate.

——. Mededeeling omtrent de zesde artesische putboring te Batavia. [Sixth Artesian Boring in Batavia.] *Jaarb. Mijn. Ned. O.-Ind.* pp. 215-224.

Dittmarsch-Flocon. Ueber die geologischen und mineralogischen Verhältnisse von Vignaes auf Karmoe in Norwegen. [Geology and Mineralogy of Vignaes, Norway.] *Sitz. Isis Dresden*, pp. 10-18.

Dollfus, G. Note sur le contact du Laekénien et du Tongrien. [Junction of the Laekenian and the Tongrian.] *Ann. Soc. Géol. Nord*, t. ii. pp. 137-140.

Discusses the question whether certain unfossiliferous sands of Brussels and the neighbourhood are Tongrian or Laekenian. Gives reasons for thinking that they may be L. Tongrian ; but this cannot be proved until the fossiliferous Tongrian is seen at its base near Louvain or Tirlemont. G. A. L.

Drasche, Dr. R. von. Eine Besteigung des Vulcans von Bourbon nebst einigen vorläufigen Bemerkungen über die Geologie dieser Insel. [Geology of Isle of Bourbon.] *Min. Mitt.* Heft iii. pp. 217-226 ; 7 woodcuts and 1 plate (map of Bourbon).

Records a visit to the Isle of Bourbon (Réunion), and the ascent of a volcano. Discusses the probable origin of the "Circus of Salazie."

——. Weitere Bemerkungen über die Geologie von Réunion und Mauritius. *Min. Mitt.* Heft iv. pp. 39-46 ; 2 woodcuts, 5 plates.

Further particulars on the geology of Bourbon, and description of Mauritius.

Drinker, Henry S. The Musconetcong Tunnel. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 231-272 ; plate.

The geology of the Musconetcong Mountain is described.

Dumortier, E., and F. Fontanes. Description des Ammonites de la zone à *Ammonites tenuilobatus* de Crussol (Ardèche), et de quelques autres fossiles jurassiques nouveaux ou peu connus. [Ammonites of the *Amm. tenuilobatus* Zone of Crussol, and other new or little-known Jurassic Fossils.] Pp. 167 ; 19 plates. *Paris.*

Eichler, W. Einige vorläufige Mittheilungen über das Erdöl von Baku. [Baku Petroleum.] *Bull. Soc. Imp. Nat. Mosc.* t. xlviii. no. 3, pp. 273-296.

The oil occurs in Miocene beds. Analysis of associated water given.

Feistmantel, O. Alter der Rajmahalschichten. [Age of the Rajmahal Beds.] *Verh. k.-k. geol. Reichs.* pp. 216, 217.

Considers the beds to be Liassic.

Fisher, Rev. O. [Title on p. 195.] *Trans. Camb. Phil. Soc.* vol. xii. pt. 2. (Private copies printed in advance, pp. 20.)

The present surface-inequalities are from 11 to 66 times the amount producible by lateral thrust arising from contraction of the globe regarded as a cooling solid. The requisite contraction may be partly due to escape of steam. W. H. D.

——. On the Irregularities of the Earth's Surface as produced by Lateral Pressure, upon the hypothesis of a liquid substratum. *Trans. Camb. Phil. Soc.* vol. xii. pt. 2. (Private copies in advance, pp. 21.)

Calculation of the form assumed under lateral compression by a flexible crust resting on a fluid. Unequal radial contraction will not account for the alternation in the same area of ocean and continent. Both the lateral-pressure and the liquid-substratum theories are borne out by geological evidence. W. H. D.

Flahault, Evariste. Sur la faune de deux bancs de Diluvium. [Fauna of two Drift-beds.] *Ann. Soc. Géol. Nord,* t. ii. pp. 141, 142.

Gives lists of redistributed fossils in the Drift gravel at the S.E. of Saint-Omer, where they appear to be exclusively Cretaceous, and at Bailleul, where they are both Cretaceous and Tertiary. G. A. L.

Fontannes, F. Le vallon de la Fuly et les sables à Buccins des environs d'Heyrien (Isère). Étude stratigraphique et paléontologique. [The Fuly Valley and the *Buccinum* sands of Heyrien.] *Ann. Soc. Agric. Lyon* (July), pp. 60; 2 pls. [? the paper imperfectly noticed on p. 307.]

Fougeroux de Denainvilliers, A. de. Description de quelques espèces de Coquilles fossiles des terrains tertiaires des environs de Paris. [Fossil Shells from the Paris Tertiaries.] *Journ. Conchyl.* ser. 3 t. xv. pp. 68–75, pl. 3.

From the Beauce Limestone are described as new, *Valvata Deshayesi, Carychium Crossei, Helix Dometi, Glandina Noueli,* and from the Provins Limestone *G. Tournoueri, Pupa Novigentiensis,* and *P. Herberti. Limnæa vesiculosa,* Deshayes, originally described from an imperfect cast, is redescribed and figured. C. P. G.

François, M. Jules. Mémoire sur la genèse des Eaux Minérales et des Émanations salines des groupes Nord du Caucase. [Origin of the Mineral Waters and Saline Emanations N. of the Caucasus.] *Ann. Chim. Phys.* sér. 5, t. vi. pp. 555–572; map.

Describes the topographical and hydrographic features of the district, brings the springs into relation with the trachytic rocks of the great chain of the Caucasus, and describes the local metamorphism effected by hydrothermal action, &c. F. W. R.

Friederici, Dr. —. [Erratic Limestone-block found near Tilsit.] *Schrift. phys.-oekon. Ges. Königsberg* (*Sitz.*), Jahrg. 16, p. 36.

Fuchs, Dr. C. W. C. Anleitung zum Bestimmen der Mineralien. Pp. 144. *Giessen.* [See p. 242.]

A second, enlarged and improved, edition of a work published in 1868. Part I. describes blowpipe tests for the principal elements &c. with which the mineralogist has to deal, and contains a complete scheme of qualitative blowpipe analysis for the determination of minerals. Part II. consists of tables for the determination of minerals by means of their physical characteristics. T. W. D.

Fulton, John. Coal-washing. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 172–183.

Describes the Broad Top coal and iron region, with analyses of coal, &c.

Gastaldi, Prof. B. Sur les Glaciers Pliocéniques de M. E. Desor. *Atti R. Ac. Sci. Torino*, vol. x. pp. 490–507. [See p. 58.]

Shows, in repudiation of Desor's view of glaciers reaching the shores of the Pliocene sea, that the lakes of the basin of the Po are excavated in Pliocene beds, the fauna of which disprove the access of glaciers to the fiord in which they were deposited. The Pliocene is covered with torrential diluvium, followed in the Glacial period by moraines produced by glaciers on the Post-Pliocene elevation of the Alps. W. H. D.

——. [Remarks on Prof. Issel's Letter (see p. 390).] *Atti R. Ac. Sci. Torino*, vol. x. pp. 770, 771.

The rock in question seems to be amphibolite.

——. Cenni sulla giacitura del *Cervus euryceros.* [Stratigraphical Position of *C. euryceros.*] *Atti R. Ac. Linc.* ser. 2, t. ii. pp. 8; plate.

Gilpin, Edwin. The Submarine Coal of Cape Breton, U. S. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 173–189, pl. xxxiv. (map).

Describes the submarine extension of the Cape Breton Coal Measures. Details of each seam. Notes as to modes of working, ventilation, &c., and a section of the Cape Breton Coal Measures are given. G. A. L.

Gley, —. Le relief des Vosges. [The Features of the Vosges.] *Ann. Soc. Emul. Vosges*, t. xiv. cah. 3, pp. 87–102.

An orographical sketch.

Gosselet, Prof. Jules. Note sur le terrain houiller et le calcaire carbonifère supérieur de Saint-Remy-Chaussée. [The Coal Measures and Upper Carboniferous Limestone of St.-Remy-Chaussée.] *Ann. Soc. Géol. Nord*, t. ii. pp. 127, 128.

Confirms the occurrence of the Coal Measures here (near Avesnes).

Gottsche, —. [Headon Fossils.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft i. pp. 227, 228.

Refers to a boulder of sandy limestone found in a gravel-pit at Eimsbüttel, near Hamburg, which contains several fossils, including the following characteristic species of the Headon series—*Paludina lenta*, *Planorbis euomphalus*, and *Unio Solandri*. F. W. R.

Gourdon, Dr. Excursion dans la vallée de l'Ariège et dans le canton de Quérigut. *Bull. Soc. Hist. Nat. Toulouse*, t. ix. pp. 285-305.
A botanical excursion, with a few geological notes.

Gregory, A. C. First Report of the Geological Surveyor, being on the Geology of Part of the Districts of Wide Bay and Burnett. Pp. 6. Fol. *Brisbane*. [See above, p. 152.]

Grewingk, Prof. C. [The Donetz Coal-district.] *Sitz. nat. Ges. Dorpat*, Bd. iii. p. 452.

——. [Geology of Dorpat.] *Ibid.* pp. 470-474.
Granite, Silurian, Devonian, Carboniferous, Permian, Jurassic, Cretaceous, Miocene, Quaternary, and Alluvium are referred to.

——. [Mammals from Drift, Livonia.] *Sitz. nat. Ges. Dorpat*, Bd. iii. pp. 475-477.

——. [Erratic Block near Dorpat.] *Ibid.* pp. 479-481.

——. [Association of Man and Mammoth in the Ural.] *Ibid.* Appendix, pp. xxviii-xxx.

Gumælius, Otto. Om jernmalmslagret vid Næverhougen i Norge. [Iron-ore Deposit of Næverhougen, Norway.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. no. 28, pp. 565-572; Geological Map and plate of Sections, &c.
The chief mass of the ore lies in euritic rock, closely following the strike of an overlying limestone. Elsewhere the ore is in the limestone itself. G. A. L.

Guyerdet, A. Étude Microscopique de Roches Éruptives. *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 391-401.
Describes French, German, Swiss, Italian, Swedish, English, Scotch, Hungarian, Belgian, Tyrolean, and Mexican rocks.

Hahn, O. H. A Campaign in Railroad District, Nevada. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 329-332.
Comprises a description of the lead-ores of the district, which occur in lenticular masses along and near the contact of crystalline limestone with a dioritic porphyry, and consist of argentiferous carbonate of lead and galena, the latter occurring in solid blocks or in ribbons running through the limestone. Associated with these are silicate, carbonate, and suboxide of copper, brown spar and calc-spar. R. B. N.

Harting, P. Bijdrage tot de Kennis der geologische Gesteldheid van den Bodem onder Utrecht en van het Eemdale. [Geology of Utrecht and the Eem Valley.] *Versl. Med. Kon. Ak. Wet.* 2 rks. dl. 9, pp. 42-50.

Helmersen, —. [Geological Sketch of the Baltic Coast from Königsberg to Liban.] *Gornoi Journ.* vol. iv. pp. 90–94 ; map.
The map shows Drift, Dunes, and Erratic blocks.

Hermann, R. Untersuchungen über die Zusammensetzung von Shepards Hermannolith. [Composition of Shepard's Hermannolite.] *Bull. Soc. Imp. Nat. Mosc.* t. xlix. pp. 179–190. (Analyses.)

Hilgendorf, F. [*Planorbis*-beds of Steinheim.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft i. pp. 224-227.
Defends his views on the distribution of the varieties of *Planorbis multiformis* at Steinheim. Maintains that the varieties *trochiformis* and *discoideus* occur in different beds, whilst Sandberger asserts them to be associated. [See p. 96.] F. W. R.

Islavine, W. Coal in Russia. *Annales Industrielles,* July 11, 18. Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 341–343.
The Coal-fields of the Donetz basin of S. Russia are divided into 4 groups:—1. District traversed by the Kharkow-Azow railway ; 7 mines from 24 to 58 fathoms deep, yielding 2 to 14 seams of coal, of from 2·3 to 8 feet thick. 2. Mines of Goloubovka, Orekhovo, and Petro Marievka ; the first contains 10 seams, 3 to 4½ feet thick ; the second 21 seams of coal and 2 of iron ; the third 10 seams (only 3 worked). 3. Anthracite Coals of Grouchevka and Pastoukhow. 4. Various mines yielding coal and iron-ore. G. A. L.

Issel, Prof. Arturo. [Ophiolite.] *Atti R. Ac. Sci. Torino,* vol. x. pp. 765–769. [See **Gastaldi,** p. 388.]

Jernegan, Joseph L. The Whale Lode of Park County, Colorado Territory. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 352–356.
The geological history of this lode is as follows:—1. Formation of the fissure in the country-rock by plutonic agency, accompanied perhaps by lateral movement of one or both of the fissure-walls. 2. Deposition from solution of minerals now composing the vein-material on the sides of the fissure. A third stage might perhaps be added, viz. the impregnation of the country-rock from the vein outwards with iron-pyrites. The frequent occurrence of barite in this lode is noted. R. B. N.

Johnson, Jasper. The Wilmington, Illinois, Coal Feld. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 188–202.
Notes the discovery of this coal-field, and describes the geological features of the neighbourhood. Average analyses of 4 samples of the coal are given ; also sections of several shafts, and of a well. R. B. N.

Johnston, R. M. The Launceston Tertiary Basin. Second Paper. *Monthly Notices R. Soc. Tasm.* for 1874. Pp. 53–62; 1 plate (fossil plants).
Correlates the Launceston Beds (3 zones) with those of Table Cape, which are regarded as homotaxial with the European Eocene.

Kaufmann, F. J. [Fossils from near Lucerne.] *N. Jahrb.* Heft iv. pp. 389–391.

The rocks of the Mythen, near Schwyz, and of the Buochserhorn and Stanserhorn in Unterwalden, have been considered Cretaceous. Fossils collected by the writer show that they are Triassic and Jurassic. F. W. R.

Keppen, A. [Coal-seams and Mines in Saghalien, especially in 5 localities.] *Gornoi Journ.* vol. iii. pp. 1–63; map and 2 pls. (sections).

Kerr, Prof. W. C. Report of the Geological Survey of North Carolina. Vol. i. *Raleigh.*

Physical Geography, Economic Geology, Maps, Plates of Fossils (described by **Conrad** and **Cope**).

Kokscharow, N. v. Resultat der an Dolomit-, Kalkspath-, Baryt-, Titaneisen-, und Zinkblende-Krystallen ausgeführten Messungen. [Measurement of Crystals of Dolomite, Calcite, Barytes, Titanium-iron and Zinc-blende.] *Bull. Ac. Imp. Sci. St. Pétersbourg*, t. xxi. pp. 47–59.

Refers to minerals from Iceland, Bohemia, the Ural, Auvergne, and the Hartz.

——. Ueber das Titaneisen vom Ural. [Titaniferous Iron of the Ural.] *Mém. Ac. Imp. Sci. St. Pétersbourg*, sér. vii. t. xxii. no. 3, pp. 15; plate.

Analysis, goniometry, and figures of Ilmenite crystals.

——. Ueber den russischen Calcit. [Russian Calcite.] *Mém. Ac. Imp. Sci. St. Pétersbourg*, ser. vii. t. xxii. no. 5, pp. 21; 4 pls.

Könen, —. von. [Letter on Triassic and Liassic Rocks near Lauterbach.] *Zeitsch. deutsch. geol. Ges.* Bd. xxvii. Heft iii. pp. 706, 707.

Koulakov, —. [Analysis of the Coals in the Western Mining Districts.] *Gornoi Journ.* vol. iv. pp. 330–335.

Lebedav, —. [On the Amphibole, Scapolite, Diopside, and Orthoclase of the Isle of Aliu.] *Gornoi Journ.* vol. iii. pp. 260-313.

Description and analysis.

Lefèvre, Th. Note sur la Présence de l'Ergeron Fossilifère dans les Environs de Bruxelles. [Fossiliferous Loess near Brussels.] *Ann. Soc. Mal. Belg.* t. x. pp. 6.

Note of discovery at Laeken of a fossiliferous brick-earth below the upper Limon d'Hesbaye.

Lehmann, Richard. Mineralogische Skizzen über den Kaiserstuhl im Breisgau in Baden. [Mineralogy of the Kaiserstuhl.] *Sitz. Isis Dresden*, pp. 7–10.

Lejeune, E. Abri sous Roche de l'âge du Renne, situé à Rinxent. Les Différents Ages Préhistoriques dans le Département du Pas de Calais. [Rock-shelter of Reindeer Epoch. Prehistoric Periods in the Pas de Calais.] *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 521–528.

Describes the deposits in an artificial cave, consisting of humus, stony clay with fluviatile shells, bone-bed with worked flints, &c.

Leluy, —. [Analysis of a Phosphatic Nodule from Cape La Hève.] *Bull. Soc. Géol. Norm.* t. ii. p. 37.

Lionnet, G. Coupe et Notes Diverses pouvant servir à l'Histoire Géologique du Sol et des Rivages du Havre, particulièrement de la Floride. [Excavations at Florida (Havre).] *Bull. Soc. Géol. Norm.* t. ii. pp. 81–103, 1 pl. (section).

Describes the characters, fossils, &c. of the alluvial beds.

Loriol, P. de, and E. Pellat. Monographie Paléontologique et Géologique des Étages Superieurs de la Formation Jurassique des Environs de Boulogne-sur-mer. *Mém. Soc. Phys. Hist. Nat. Genève*, t. xxiv. pp. 1–325, pls. xi–xxvi.

63 new species described. Will be noticed in the next GEOLOGICAL RECORD.

Ludwig, Rudolf. [Geology of Olonetz, Russia: title &c. on p. 80 [after "Moscou," insert "t. xlviii." geol. map].

Sketch of the geology, with description and figure of *Cystiphyllum gracile*, n. sp., Silurian, and 2 analyses of iron-ores by **G. Ludwig**.

——. Die Tertiärformation in der Umgegend von Sulz vorm Walde in Elsass. [Tertiary of Sulz, Alsace.] *Notizbl. Ver. Erdk. Darmstadt*, Folg. iii. Heft xiv. pp. 65–68.

Notes with lists of fossils on the (? Oligocene) petroleum sandstones and limestones of Alsace.

——. Geologische Notiz. *Notizbl. Ver. Erdk. Darmstadt*, Folg. iii. Heft xiv. p. 92.

The Wollastonite of Auerbach is thus crystallized, $\infty\breve{P}\infty \,.\, \infty\bar{P}\infty \,.\, P$.

Mackenzie, J. Report from the Examiner of Coal Fields on the condition and Prospects of the Coal Fields; together with the Reports of the Inspector of Collieries on the state of the various Coal, Petroleum Oil, Cannel Coal, and Kerosene Shale Mines in New South Wales, &c., for the year 1874. Pp. 5. Fol. *Sydney*.

Mentions a section of the L. Coal Measures, near Stroud, in which there are *Sigillaria* and *Stigmaria*.

Matthew, G. F. On the Surface Geology of New Brunswick. *Canad. Nat.* n. s. vol. vii. pp. 433–454.

Treats of the Glacial striæ and Boulder Clay, over which come the Syrtensian sands and gravels. The Boulder Clay is attributed to the ice-foot advancing from the north, the Syrtensian beds being deposited in the ocean after the retreat of the ice. The set of the currents, formation of lake-basins, and tidal erosion are treated of. R. B. N.

Mercey, [N.] de. Lettre à M. Gosselet relative aux communications sur la craie du Pas-de-Calais, par M. E. Chellonneix. [On M. Chellonneix's paper on the Chalk of the Pas-de-Calais.] *Ann. Soc. Géol. Nord*, t. ii. pp. 120–122.

Notes points of detail relating to Aix-Noulette and Bouvigny.

Moeller, V. [On the Coal Measures discovered in the Northern Ural in 1872–1874.] *Gornoi Journ.* vol. iii. pp. 102–126, geol. map.

Mourlon, Michel. Sur les Terrains de la Basse Belgiques. [Belgian Netherlands.] *Compt. Rend. Assoc. Franç*, 3 Sess. pp. 402, 403.

Deals chiefly with the Crag beds. (Abstract.)

Newall, R. S. On Supplying Newcastle and District with Water from Lake Ullswater. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 49–60.

Contains analysis of water from Ullswater.

Neyt, P. J. Lettre sur les alluvions de la Zélande. [Alluvium of Zealand.] *Ann. Soc. Géol. Nord*, t. iii. pp. 134–136.

In the island of Nord-Beveland the alluvial beds are as follows:— 1. Ploughed soil (½ a metre below mean sea-level); 2. Clayey sand passing into pure sand with marine shells; 3. Peat; 4. Bluish clay; 5. Bluish sand. Two analyses of clays are given. G. A. L.

Nicholson, Prof. H. Alleyne. On the Mining District on the North shore of Lake Superior. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 237–248, pls. xxxix., xl. (maps, one geological).

Gives notes respecting the Silver Islet, Thunder Bay, Silver Harbour, Silver Lake, and Shabendowan Mines. Commercial details are added.

Olbers, E. W. Några anteckningar om de lösa jordaflagringarna i Halland. [Drift of Halland.] *Geol. Fören. Stockholm Förhandl.* Bd. ii. No. 26, pp. 483–490; map and plate of sections.

Olcott, Eben E. The Ore Knob Copper Mine and Reduction Works, Ashe County, N. C. *Trans. Amer. Inst. Min. Eng.* vol. iii. pp. 391–399; plate (section).

Refers to the copper-deposits of the Appalachian chain. The copper-vein at Ore Knob is a true fissure-vein. Remarks by Dr. T. S. Hunt are given. R. B. N.

Ormerod, G. W. Notes on the New Red Sandstone between Maidencombe and Exeter. *Rep. Teign. Nat. Club* for 1874, pp. 5, 6.

——. The Dart. *Ibid.* pp. 14–16.

Ortlieb, J. Observations à la note de M. Dollfus sur le contact du Laekénien et du Tongrien dans les environs de Bruxelles. [On M. Dollfus' note (see p. 386).] *Ann. Soc. Géol. Nord*, t. ii. pp. 140–143.

Thinks that the upper series of the Chaussée-Louise (Brussels) is

Laekenian. M. Dollfus thinks it Tongrian. The beds are unfossiliferous. G. A. L.

Ortlieb, J. Réflexions à propos d'une communication de MM. Chellonneix et Lecocq, au sujet de la présence au Mont d'Halluin de fragments isolés de grès paniséliens. [On MM. Chellonneix and Lecocq's Note on isolated Fragments of Paniselian Sandstone at Mt. Halluin.] *Ann. Soc. Géol. Nord*, t. ii. pp. 198–200.

The paper referred to is that on the neighbourhood of Tourcoing (p. 385). Urges caution in the interpretation to be given to the presence of disseminated débris of distant formations. G. A. L.

——. Note sur le Mont des Chats. [The Mont des Chats (Franco-Belgian Frontier).] *Ann. Soc. Géol. Nord*, t. ii. pp. 201–213; one fig. in text.

The geology of this Tertiary Hill is explained by means of 6 sections. It is shown that the first modelling of the Flemish Tertiary hills goes back to U. Eocene times. G. A. L.

Parsons, Dr. H. F. The Flora of East Somerset. *Naturalist*, vol. i. no. iv. pp. 53–55.

Abstract of paper read to Somerset Archæol. Nat. Hist. Soc. Notes the difference of the flora on sandy and calcareous beds, and the relation between the geology and flora. W. W.

Pengelly, W. Notes on recent Notices of Kent's Cavern. *Rep. Teign. Nat. Club* for 1874, pp. 6–9.

Phillips, Prof. John. Illustrations of the Geology of Yorkshire. Part 1. The Yorkshire Coast. Ed. 3. Edited by **R. Etheridge.** Maps and 28 plates (fossils and sections). Pp. xii, 354. 4to. *London.*

Palæozoic Rocks, p. 1. Vale of York (Pleistocene, Permian, Trias, and Lias), p. 8. Moorlands (Lias and L. Oolites), p. 24. Tabular Oolitic Hills, p. 40. Vale of Pickering, p. 46. Chalk Wolds, p. 50. Holderness (Pleistocene), p. 55. Coast-section (Pleistocene, Cretaceous, Oolites, and Lias), p. 67. Diluvium, p. 162. Economic Geology, p. 173. The Basaltic Dyke, p. 190. Fossils: Plants, p. 193; Animals, p. 234. Elevations, p. 273. Post-tertiary Shells (by **J. G. Jeffreys**), p. 274. Oolitic Foraminifera (by **T. R. Jones**), p. 278. Bibliography (by **W. Whitaker**), pp. 281–320. W. H. D.

Phillips, J. A. On the Structure and Composition of certain pseudomorphic Crystals, having the form of Orthoclase. *Journ. Chem. Soc.* ser. 2, vol. xiii. pp. 684–687.

Pseudomorphs after crystals of orthoclase from Huel Coates, St. Agnes, Cornwall, were examined microscopically and chemically. One specimen was found to consist of silvery white mica-like plates, with rounded particles of quartz of contemporaneous formation, and a few grains and crystals of tin-oxide. Another crystal resembled this, but contained more cassiterite; while a third was largely composed of crystalline cassiterite, traversed by crystals of blue tourmaline, associated with quartz and flakes of the micaceous mineral. Analyses are given in duplicate of one pseudomorph, chiefly micaceous, and of another with 70·5 p. c. of stannic oxide. F. W. R.

Pomel, —. Il n'y a point eu de mer intérieure au Sahara. [There has been no Saharan Inland Sea.] *Compt. Rend.* t. lxxx. pp. 1342, 1343; and *Bull. Soc. Géol. France*, sér. 3, t. iii. p. 495.

Reasserts his belief that the proposed Saharan sea is an impossible project. Claims to have first shown by indirect evidence that the Isthmus of Gabes is solid rock, as proved by M. Fuchs. The recent levelling proves the discontinuity of the depression of the "Chotts" below the sea-level, and thus shows the impossibilty either of the Gabes sea or of the former great Saharan sea. G. A. L.

Potier, —. Sur le Terrain de Transport. [Drift (of N. France).] *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 376, 377. (Abstract.)

——. Failles de l'Artois. [Faults in Artois.] *Ibid.* pp. 377, 378.

Abstract; the faults in the Cretaceous and Tertiary are continuous with pre-Triassic faults in the Coal Measures.

——. Transgressivité du Terrain Houiller sur le Calcaire Carbonifère. [Overlap of Coal Measures on Carboniferous Limestone (in N. France).] *Compt. Rend. Assoc. Franç.* 3 Sess. pp. 378–380.

Ramsay, Prof. A. C. The Pre-Miocene Alps and their subsequent Waste and Degradation. *Proc. Roy. Inst.* vol. vii. pp. 455–457.

The thicknesses of the subdivisions of the Miocene estimated, and an average struck for the country between Geneva and Constance. An account is given of the methods by which an approximate estimate was made. The conclusion is that in pre-Miocene times the Alps must have been higher than now, even though since that time they may have been heaved up 5500 feet. R. B. N.

Rath, Prof. G. vom. Aus einem Briefe. [Notes from Journal.] *Bull. Soc. Imp. Nat. Mosc.* t. xlix. pp. 141–144.

Journey in Austria and Germany.

Richards, Prof. R. H. On a newly-discovered Lead Vein in Newburyport, Mass. *Proc. Boston Soc. Nat. Hist.* vol. xvii. pp. 200–204.

Robson, H. R. Introductory Address. *Institution of Engineers and Shipbuilders in Scotland*, vol. xix. pp. 1–25, pls. i., ii.

Describes the Sub-Wealden boring (p. 6), and gives a detailed section of the second boring (plates 1 and 2) to 1824 feet, on the scale of 35 feet to an inch. Works for water-supply in various parts of Scotland are noticed, pp. 9–17. W. T.

Routledge, Wm. Notes on the Sydney Coal-field in the Island of Cape Breton, British North America. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 191–216, pls. xxxv., xxxvi. (map, &c.)

The district is divided into four "basins"—the Sydney Mines, Lingan, Glace Bay, and Block House. Sections and full details respecting these are given, the various collieries and workings being described separately. A tabular statement of the coal worked up to 1874, and another with analyses and dip of the chief coals, are given. G. A. L.

Salis, Friedr. von. Notanden über erratischer Erscheinungen im Rheingebiet (Quaternäre Bildungen). [Erratics in Rhine Basin (Quaternary).] *Jahrb. Schweiz. Alpenclub*, Jahrg. x. pp. 457–464.

Salwey, T. J. The Geology, History, and Natural Features of the Neighbourhood; an address given at the Haye Park Meeting. *Trans. Woolhope Field Club*, 1872, pp. 83–88.

Samuelson, N. [Analysis of dried brick-clay used in Sheffield as a flux for welding cast steel.] *Mining World*, vol. viii. p. 591.

In a paper " On Welding Iron," by Mr. Howson.

Schmidt, Adolf. On the Forms and Origin of the Lead and Zinc Deposits of South-west Missouri. *Trans. Acad. Sci. St. Louis*, vol. iii. no. 2, pp. 246–252.

These deposits occur mostly in the Keokuk group (L. Carboniferous). Five kinds are recognized :—1. Runs; 2. Openings; 3. Impregnations of fissured chert beds; 4. Irregular deposits in loose accumulations of broken chert; 5. Seams and impregnations in quartzite. Each kind is described, and the origin of the ores is discussed. F. W. R.

Schmidt, Prof. Carl. [Analysis of Gas from the Elbruzzo.] *Sitz. nat. Ges. Dorpat*, Bd. iii. App., pp. xxiii, xxiv.

Simpson, John Bell. On the Coal-fields and Mining Industries of Russia. *Trans. N. Engl. Inst. Eng.* vol. xxiv. pp. 3–18, pls. i.–vii. (maps and sections).

Describes the Moscow, Donetz, Ural, and Polish coal-fields, giving statistics of production of coal and other Russian minerals.

Skalkovski, C. [Mining Products in Russia.] *Gornoi Journ.* vol. iii. (? iv.) pp. 195–245. Also published separately in French as " Tableau statistique de l'Industrie des Mines en Russie." *St. Petersburg.*

Spencer, J. W. Geological Sketches of the neighbourhood of Hamilton. *Canad. Nat.* n. s. vol. vii. p. 463–471.

Describes the Medina, Clinton, and Niagara formations. The Dundas Valley was first formed by a river flowing from the W., then partly filled, during subsidence, by Erie Clay, and finally re-excavated; the old shore-lines consist of débris of the Hudson River and Niagara rocks. The minerals and mineral waters are referred to. R. B. N.

Spezia, G. Nota sul Berillo del Protogino del Monte Bianco. [Beryls in the Mt. Blanc protogine.] *Atti R. Ac. Sci. Torino*, vol. xi. pp. 82–87.

Struve, H. Untersuchung einer neuentdecken Steinkohle bei Gelazk in Imeretien. [Analysis of a newly discovered Coal in Imeretia (Asia Minor).] *Bull. Ac. Imp. Sci. St. Pétersb.* t. xxi. pp. 71–74.

Analysis by **Rudnew.**

Swanston, W. Graptolites, with special reference to those found in County Down. *Proc. Belfast Field Club*, ser. 2, vol. i. pt. ii. pp. 115-117. [Abstract.]

Mr. Lapworth, from specimens sent, regards the black shales as equivalent to the Birkhill Beds of Scotland, the Coniston mudstones of Westmoreland, and Lower Llandovery of Wales. The author has found 3 Crustacea in them, and 12 species of Graptolites. W. H. D.

Symonds, Rev. W. S. A Lecture on the Geology, Topography, Archæology, &c. of the neighbourhood of May Hill and Ross, given on the occasion of the Club visiting this locality. *Trans. Woolhope Field Club*, 1872, pp. 72–78.

Trautschold, H. Briefe aus dem Ural. [Notes of a Trip to the Ural.] *Bull. Soc. Imp. Nat. Mosc.* t. xlix. pp. 110–140.

Trentinaglia-Telvenburg, J. R. von. [W. Tyrol: full title, p. 103.] Gives a detailed description of the physical features of the country and its glacial system. The chapter specially devoted to geology (pp. 122–137) is divided into a "general" and a "special" part. The latter describes the rocks of the district as follows:—1. *Mica schist*; 2. *Gneiss*: *a*. "Eye-gneiss" (Augengneiss), a porphyritic gneiss, with large lenticular masses of orthoclase; *b*. Granulite gneiss; *c*. Mica-gneiss; *d*. Quartz-gneiss: *e*. Protogine-gneiss; *f*. Micaceous iron-gneiss. 3. *Hornblende schist*; and 4. *Allgäu beds*, probably Jurassic. Also mentions the occurrence of granite, serpentine, spilite-diorite, Steinberg limestone (L. Lias), and gypsum. F. W. R.

Tribolet, M. F. de. Note sur les Minéraux et Roches recueillis dans la Partie Nord de l'Abyssinie, par M. P. Traub. [N. Abyssinian Minerals and Rocks.] Pp. 5. Published with *Bull. Soc. Sci. Nat. Neuchâtel*, t. x. cah. 2.

Gives the Abyssinian rock-series, and the crystallographic formula of pegmatite and desmin.

——. Note sur les Dépôts Erratiques de la rive sud du Lac de Thoune et de la Vallée de Saseten. [Drift of the Lake of Thun.] Pp. 8. Published with *Bull. Soc. Sci. Nat. Neuchâtel*, t. x. cah. 2.

——. Notes Géologiques et Paléontologiques sur le Jura Neuchâtelois. [Geological and Palæontological Notes on the Neuchatelese Jura.] Pp. 20. Published with *Bull. Soc. Sci. Nat. Neuchâtel*, t. x. cah. 2 [continued from 1874].

4. On some Callovian deposits in the Neuchatelese and Vaudois Jura, pp. 1–12; 5. On Homomya Marls occurring at Chaux de Fonds, pp. 13-16; 6. On the Virgulian of the Brenets, pp. 17–19; 7. Correction to article No. 2 (see GEOLOGICAL RECORD for 1874, p. 103), p. 20. Lists of fossils are given in nos. 4, 5, 6. W. H. D.

Whittlesey, Col. C. Coal Seam No. 6. Ohio Geology. *Proc. Boston Soc. Nat. Hist.* vol. xvii. pp. 183–200.

Stratigraphical details.

Wöhler, F. Ueber den Pachnolith von Grönland. [**Pachnolite from** Greenland.] *König. Ges. Wiss. Göttingen*, No. 23. [**Abstract in** *N. Jahrb.* Heft i. pp. 58, 59.]

A crystallized mineral, apparently rhombic, on cryolite from Greenland, on analysis was found to be a hydrated cryolite, with ⅔ of the sodium replaced by calcium. From its falling to powder when heated, Wöhler meant to call it *Pyroconite*, but now thinks it is Knop's *Pachnolite.* F. W. R.

Zezi, P. Cenni intorno ai lavori per la *Carta Geologica d'Italia in grande scala. Ann. Min. Agri. Ind. Comm.*

Zincke, Rev. F. B. A Walk in the Grisons. Pp. xv, 368. 8vo. *London.*

Refers to the denudation of valleys by their streams, pp. 2–4, 88–91, 294–296; earth-pillars, pp. 43–45; excavation of tarn by falling masses of snow, p. 198. W. W.

[Report sent by the Society to the Provincial Landtag on Geognostical Researches in the Province of Prussia.] *Schrift. phys.-oekon. Ges. Königsberg.* (*Bericht*), Jahrg. 16.

Report upon Geographical and Geological Surveys west of the One Hundredth Meridian. iii. Geology. Pp. 681, 13 pls. 4to. *Washington.*

Reports by **G. K. Gilbert** on part of Nevada, Utah, California, and Arizona; on parts of New Mexico and Arizona; by **A. R. Marvine,** on the Geology of the Route from St. George, Utah, to Gila River, Arizona: by **E. G. Howell,** on the Geology of parts of Utah, Nevada, Arizona, and New Mexico; by **F. J. Stevenson,** on Colorado [already noticed, p. 131]; Mineralogical Report by **Dr. O. Loew.** From note in *Amer. Nat.* vol. x. p. 622. W. W.

Reports and Official Letters to the Kaitakushi, by **Horace Capron,** Commissioner and Adviser, and his Foreign Assistants. Pp. 748. 8vo. *Tokei.*

Prof. W. P. Blake. Pp. 1–16. On the Mineral Resources of Yesso, viz.:—The Lead Mines and Furnaces at Tchinowatari; Geology of that neighbourhood; Gold and Copper Mines at Kakumi; Iron at Kobui; Coal near Usibets; Gold Mines of Kunnui (in coarse gravel); Petroleum, Volcano Bay; Sulphur in many volcanic peaks and inactive volcanoes; Gold and Silver in Sado; and Magnetic Iron Ore, Nambu in Nippon.

Benjamin Smith Lyman. Preliminary Report on the First Season's Work of the Geological Survey of Yesso. Pp. 115–160. The following groups of rocks occur:—Alluvium, new and old (contains beds of lignite and peat); Volcanic pebble-rocks; Volcanic Rocks; Rocks of the Toshibets Karafto System of Folds; Coal-bearing Rocks, or Rocks of the Horumui Kuril System of Folds; Rocks of the Horumui Karafto System of Folds; Rocks of the Toshibets Kuril System of Folds. The Kayanoma and Horumui Coal Fields are described; the latter is probably Tertiary. An assay of the coal made by **Mr. Munroe** is given. The Kudow coal is insignificant. *Iron Sand* is most abundant on the S.

shore of Volcano Bay, especially near Yamukushinai; it occurs in several other places. *Sulphur* is mostly found within the craters of extinct volcanoes. *Limestone*, the principal exposure is on the stream Garonosawa, near Arikawa and Sekirichi; other localities are named. The limestone is much metamorphosed, is dark blue or light grey, contains no fossils, is well cleaved, and belongs to the Horumui-Karafto system. *Gold* of the Toshibets field. "The bed rocks are of the Toshibets Karafto system, chiefly soft sand and clay." The gold occurs in gravel bordering the river. *Rock Tar* occurs at Idzumisawa, where it comes from the "bluish gray shaly sand rock," which corresponds in dip to the Toshibets Karafto system, and contains similar fossils to that and the Yurap Rocks. The Tar comes also from Washinoki and Yamukushinai; it is probably Tertiary. *Mineral Springs* are numerous in the S. part of Yesso: a table is given of 21, showing their locality, heat, the character of the rock in which they occur, &c.

H. S. Munroe. Geological Survey of Hokkaido. Yesso Coals. Pp. 163–199 (with 3 Tables of Assays). 2 general sections of the Kayanoma and Horumui Coal-fields show the relative positions of the different coal-beds and the main characters of the rock between. Tables I. and II. contain detailed assays of various Japanese coals. Table III. gives their ultimate analyses and calorific powers. They are neither "lignites nor brown coal, but true bituminous coals."

B. S. Lyman. Geological Survey of Hokkaido. Report of a Geological Trip through and around Yesso, with notices of the Topography . . . . and of the Progress of the Geological Survey. Pp. 325–564. Several sections, mostly of coal beds, are given. Hot mineral springs were of frequent occurrence.

B. S. Lyman. Geological Survey of Hokkaido. Reports of Rough Surveys (in 1873) of the following Oil Lands in Yesso:—Yamukshinai, pp. 591–605; Idzumisawa, pp. 607–616; and Washiuski, pp. 617–631. The oil oozes from the Toshibets rocks (? late Tertiary) through alluvial sands. Fossil *Serpulæ* abound in the Idzumisawa rocks.

Henry S. Munroe. Geological Survey of Hokkaido. The Gold-Fields of Yesso. Pp. 665–744. [Also published separately: see above, p. 168.] Detailed results of the gold-washing; topographical survey; and an outline of the geology of the Toshibets, Kudo, Esashi, Matsumai, Musa, and Tokachi gold-fields. On the journey, numerous so-called copper, lead, and silver mines were examined and reported on.

R. B. N.

Sixth Annual Report of the Geological Survey of Indiana, made during the year 1874. Pp. 288; 4 maps (in pocket), with geological notes; 1 section. 8vo. *Indianapolis.*

Geological Report, by **E. T. Cox**, with sections, and analyses of iron-ores and clays (? by **Dr. G. M. Levette**), pp. 5–23. *Antiquities*, p. 24, with sections at pp. 27, 34. Then follow Reports on various Counties, with details of sections, notices of minerals, etc. *Jackson Co.* (? by **E. T. Cox**), p. 41; *Brown Co.*, (by **Prof. John Collett**), p. 76; *Scott* and *Jefferson Counties* (by **Prof. W. W. Borden**, pp. 111, 135–186. W. W.

SUPPLEMENT

TO THE

GEOLOGICAL RECORD FOR 1874.

ADDITIONAL ERRATA, &c.

Pp. 62, 83, 130. Foster, Moffat, Baber. These papers appeared also in *Iron*.
Pp. 63, 64. Fuchs. The papers on the Tertiary of Tarento, on Miocene near Syracuse, and on Tertiary beds of Malta, also translated into Italian, *Boll. Com. geol. Ital.* pp. 369, 373, 377.
P. 109, Toula. For a notice of this paper see pp. 322, 323.
P. 137, line 5 from foot, *for* xxx. *read* xx.
P. 165, last entry, *for* Hutton *read* Dutton.
P. 195, line 20, *for* 59th and 60th *read* 39th and 40th.
P. 269, Entries 3–6 are by Prof. P. Gervais, not by Prof. A. Gaudry.
P. 279, line 22, *for* xx. *read* xxx.
P. 286, lines 22, 23, for *Pteritonella* read *Pteronitella*.
P. 357, Jentzsch. This paper is from *Zeitsch. gesammt. Nat.* Bd. x. p. 523.

Amiot, H. Rapport sur une demande en concession 23 Janvier 1874. [Report on a proposed Mining Concession.]

Refers to iron-ore deposits at Navogno (Haute-Loire). These occur at the base of supposed Tertiary beds immediately resting upon granite. An analysis of a rich specimen of the ore by **M. Baroulier** is given.

G. A. L.

Anon. The Popular Encyclopedia. 8vo. *London.* Half-vols. v., vi., vii.

Geological matter throughout. Art. "Geology," [by **Prof. A. C. Ramsay**], in ½-vol. vi. pp. 583-613, pls. lxxv.-lxxviii.

——. [Investigations of **J. Deslandes** in Alluvial Deposits of Florida, Normandy.] *Le Havre* (journal), 13 Mar., and *Bull. Soc. Géol. Norm.* t. ii. pp. 42, 43 (1875).

Discovery of Mollusca no longer frequenting that coast.

Ansted, Prof. D. T. The Mountains and Valleys of Virginia. *Illustrated Travels* (edited by Bates), vol. vi. pp. 297–300, 368–371.

Contains some geological information.

Axerio, Giulio. The Mineral Industry of Italy. *Ann. Assoc. Ing. Liège*, pp. 135-202. (Abstract in *Proc. Inst. Civ. Eng.* vol. xlii. pp. 360-365.)

Bakoulovski, —. [On Masses of Iron seen by Pallas in 1771, 250 versts from Krasnoiarsk, Siberia.] *Gornoi Journ.* vol. ii. pp. 93–103.

Barbot de Marny. [Travels in the Tschaptschatschi Hills.] *Gornoi Journ.* vol. ii. pp. 62–92, map (topographical), and 5 sections. Separately pub. in French. Pp. 28. 2 pls. 8vo. *St. Petersburg.*

Partly Tertiary beds, with *Dreissena polymorpha*, *Paludina achinoïdes*, &c.

——. [Geological Description of the Governments of Simbirsk, Saratov, and Tamboosk.] *Gornoi Journ.* vol. iii. pp. 169–181, pl. 3 (fossils).

Refers to searches for coal. The formations are Jurassic, Cretaceous, and Tertiary. *Cardita Volgensis* and *Cucullæa Volgensis* are figured. 2 sections are given in the text. A. B.

Barcena, M. Las rocas de Tecali. [Rocks of Tecali.] *Naturaleza*, t. iii. p. 7.

Barral, J. A. [Analyses of Chalk from Gien.] *Bull. Soc. centr. Agric. France*, 3 sér. t. ix. p. 832.

Beck-Bernard, C. Die Argentinische Republik. 18mo. *Bern.*

A handbook for colonists. Contains information as to soil and mineral resources of the country.

Beliben. [Serpentine.] *Ann. Soc. Agr. Sci. Le Puy*, t. xxxi. pp. 412–414.

Analysis of specimen from near Dore, Puy de Dôme.

Belknap, General W. W. Letter from the Secretary of War, in answer to a resolution of the House of April 14, 1874, transmitting a report upon the James River and Kanawha Canal project. *House of Representatives*, 43d Congress, 1st Session, Ex. Doc. No. 219. Pp. 47. *Washington.*

Contains summaries of the geological reports and surveys relating to W. Virginia published before 1874.

Bellardi, Prof. I. Molluschi dei terreni terziari del Piemonte e della Liguria. Pt. ii. 1873. [Tertiary Mollusca of Piedmont and Liguria.] Report by **Gastaldi** and **Lessorer.** *Atti R. Ac. Sci. Torino*, vol. ix. pp. 197–221.

Describes the beds, fossils, &c. of the Eocene, Miocene, and Pliocene.

Billings, E. On some New Genera and Species of Palæozoic Mollusca. *Canad. Nat.* n. s. vol. vii. pp. 301, 302.

Ilionia (n. gen.) includes some *Tellinæ* and *Anatinæ*. *I. Canadensis* (n. sp.) is described and figured from U. Silurian. *Pteronitella* (n. gen.) is defined to include some U. Silurian *Pterineæ*. W. H. D.

Binney, E. W. On the Structure of Coal. *Coll. Guard.* vol. xxviii. p. 388.

Bořicky, Dr. Emanuel. Petrographische Studien an den Basaltgesteinen Böhmens. *Arb. geol. Abth. Land. Böhm.* Th. ii. Bd. ii. pp. 1–294; 8 chromolith. plates.

Contains a detailed microscopic and chemical description of the following Bohemian rocks:—Magmabasalt, nephelinbasalt, leucitebasalt, feldspar-basalts, trachy-basalts, tachylyte-basalts. Considers their age and distribution; the enclosing of foreign rocks and minerals, and the results of their contact; also the paragenesis of secondary minerals.

E. T. N.

Brandt, J. F. Ergänzungen zu den fossilen Cetaceen Europa's. [Fossil European Cetacea.] *Mém. Ac. Imp. Sci. St. Pétersb.* ser. vii. t. xxi. no. 6, pp. 54, pls. i.–v.

Briart, A. Sur les puits naturels. [Natural Wells, Hainault.] *Ann. Soc. Géol. Belg.* t. i. *Bulletin*, pp. xlv–xlvii.

Brusina, S. Naravoslovne crtice sa sjevero istoche obale jadranskoga mora: Dio Drugi. Pp. 65. *Agram.*

Burbank, L. S. Observations on the Surface Geology of North Carolina, with special reference to some Phenomena of the Drift of the Northern United-States. *Proc. Boston Soc. Nat. Hist.* vol. xvi. pp. 150–155.

Burthe, L. Mines de soufre dans la Louisiana. [Sulphur Mines in Louisiana.] *Bull. Soc. Géogr. Paris*, pp. 433–437.

Capellini, Prof. G. Strati a Congeria, formazione Œninghiana e piano del calcare di Leitha nei Monti Livornesi. [Congeria Beds, Œningen Stage and Leitha Limestone in the Leghorn Hills.] *Rend. Ac. Sci. Bologna*, and *Boll. R. Com. Geol. Ital.* pp. 49–51 (1875).

Preliminary notice of occurrence of these horizons.

Cope, E. D. Report upon Vertebrate Fossils discovered in New Mexico, with descriptions of new species. *Engineer Dept. U.S. Army.*

Lacustrine (Eocene) deposits are described, of nearly the same age as the Bridger group of Wyoming. The characteristic genera are *Bathmodon*, *Hipposyus*, and *Phenacodus*. The following new species are described:—*Ectoganus gliriformis* (gen. et sp. nov.), *Calamodon simplex* (gen. et sp. nov.), *C. arcamœnus*, *C. novomehicanus*, *Esthonyx bisulcatus*, *E. Burmeisterii*, *E. acer*, *E. miticulus*, *Meniscotherium chamense* (gen. et sp. nov.), *Bathmodon simus*, *B. molestus*, *B. lomas*, *B. elephantopus*, *Phenacodus primævus*, *P. omnivorus*, *P. sulcatus*, *Oxyæna lupina* (gen. et sp. nov.), *O. morsitans*, *O. forcipata*, *Pachyæna ossifraga* (gen et sp. nov.), *Prototomus viverrinus* (gen. et sp. nov.), *P. insidiosus*, *P. Jarrovii*, *Limnocyon protenus*, *Alligator chamensis*, *Plastomenus lachrymalis*. The first four of the above belong to *Toxodontia*, an order new to North

America. The lacustrine deposits of the Rio Grande are also described. The fauna proves to belong to that named Pliocene in Dakota and Colorado, and contains *Hippotherium*, *Protohippus*, *Procamelus*, *Canis*, &c. New species:—*Martes nambianus*, *Cosoryx ramosus* (*Cervidæ*), *C. teres*, *Hesperomys loxodon*, *Panolax sanctæfidei* (n. gen. and sp.), and *Cathartes umbrosus*. L. C. M.

Cossa, Prof. Alfonso. Intorno alla Lherzolite di Locana nel Piemonte. [Piedmontese Lherzolite.] *Atti R. Ac. Sci. Torino*, t. ix. pp. 545–555, 2 pls. (coloured rock-sections).

Describes Lherzolite. Gives analyses of olivine, enstatite, and diopside.

Courtiller, —. Éponges fossiles des sables du terrain crétacé supérieur des environs de Saumur, suivies des nullipores à squelette siliceux. [Fossil Sponges and Siliceous-skeletoned Nullipores of U. Cretaceous Sand near Saumur.] Pp. 54, 106 plates. *Paris.*

Cubich, Dr. G. Notizie naturali e storiche sull' Isola di Veglia. [Natural History of the Island of Veglia.] Pp. 144. *Trieste.*

Contains some geological information.

Davidson, Th. Sur les Brachiopodes Tertiaires de Belgique. [Belgian Tertiary Brachiopods.] *Ann. Soc. Mal. Belg.* t. i. *Bull.* pp. 20, pl. ii., iii.

Translation by **Th. Lefevre** of the work noticed in the GEOLOGICAL RECORD for 1874, p. 293, with corrections made by the author's request. The name *Crania Nysti* is replaced by *C. Adanii*. W. H. D.

Davies, William. Catalogue of the Pleistocene Vertebrata from the neighbourhood of Ilford, Essex, in the Collection of Sir Antonio Brady. For private circulation. Pp. xxvii and 75 ; Plate and 3 woodcuts. 4to. *London.*

The Introduction, by **Sir A. Brady**, pp. vii–xvii, gives an account of the origin of the collection, offers an explanation of the occurrence of so many fossil animals in the Ilford marshes. A Description of the Locality, with Note on the Mammalian Remains, by **H. Woodward** and **W. Davies** (pp. xviii–xxvii) is largely derived from papers published in the *Geol. Mag.* The descriptive catalogue (pp. 1–62) contains an account of the collection, now in the British Museum. The fossils are referable to the following species:—*Felis spelæa*, *Canis vulpes*, *Ursus*, *Elephas primigenius*, *E. antiquus*, *Rhinoceros leptorhinus*, *R. megarhinus*, *R. tichorhinus*, *Equus fossilis*, *Megaceros Hibernicus*, *Cervus elaphus*, *C.* sp., *Bison priscus*, *Bos giganteus*, *Hippopotamus*, &c. An appendix contains a letter from **Prof. W. Flower**, lists of Mammalia from Ilford in other collections, a note on *Rhinoceros leptorhinus* by **H. Woodward**, and other matter chiefly extracted from the *Geol. Mag.* L. C. M.

Dawson, G. M. The Lignite Formations of the West. *Canad. Nat.* n. s. vol. vii. pp. 241–252.

Describes a region on the 49th parallel. The W. coal-bearing rocks are mostly hidden by the Cretaceous. The base of the lignitic is the "Roche Percée," a hard nodular sandstone weathering into fantastic shapes, and resembling the base of the Wyoming Lignitic. The thickest coal-seam in the Souris valley is 7½ feet, in Porcupine Creek 18 feet. The presence of *Corbula* indicates brackish as well as fresh water. The lignite is prone to smoulder away in place. The series is most developed in Montana Territory, extending to the Coteau de Missouri, proving the former existence of forests in a now treeless region. Analyses of lignite from Souris Valley and Porcupine Creek are given. The horizontality of the beds would enable the "long wall" system to be adopted. The base of the Lignitic is Lowest Tertiary (Eocene), an extension of Hayden's Fort Union group. R. B. N.

Delestre, E. A propos de la mer intérieure en Algérie, ou fausse interprétation géographique. [The Inland Algerian Sea.] Pp. 23. *Algiers.*

Desplace, —. Résistance des pierres à l'écrasement. [Crushing Resistance of Stone.] *Bull. Soc. Sci. Indust. Marseille*, t. i. pp. 189–204.
Account of experiments, made in 1845, on 88 kinds of stone.

Dewalque, G. Quelques notes sur le sondage Menin. [Boring at Menin.] *Ann. Soc. Géol. Belg.* t. i. *Bull.* pp. lxxv, lxxvi.
Cretaceous on Silurian?

——. Compte Rendu de la Réunion Extraordinaire de 1874 tenue à Marche du 4 au 6 Octobre. [Excursion at Marche.] *Ann. Soc. Géol. Belg.* t. i. *Bull.* pp. lxxviii–xcv.
Details of ground traversed (Cambrian, Silurian, and Devonian).

Doering, Dr. Ad. Studien über die chemischen und physikalischen Verhältnisse des Bodens der Pampa-Formation. [Chemical and Physical Composition of the Soil of the Pampas.] *La Plata Monatsschrift*, no. 8, pp. 113–119.

Eisen, Gustaf. Om foglars förmåga att bidraga till sammanblandning af fossilförände jordlag. *Œfv. K. Vet. Akad. Förh.* Årg. 31, no. 7, pp. 17–21, pl. vii. (section).
Refers to San Pedro, California.

Elliot, Prof. J. Geology of the Hawick District. *Proc. Berwick. Field Club*, vol. vii. no. 1, pp. 71–74.
In Teviotdale above and for 4 miles below Hawick the rocks are Silurian; Old Red Sandstone occurs lower down the valley. The hills are capped by basalt, and the district is traversed by basaltic dykes.
W. T.

Feistmantel, Karl. Die Steinkohlenbecken bei Klein-Prilep, Lisek, Stilec, Holoubkau, Mireschau und Lolkow. [Coal-basins, Bohemia.]

Arb. geol. Abth. Land. Böhm. i Theil. ii Band, ii Abth. pp. 17–98, with 9 woodcuts.

Descriptions of the coal basins of the above localities, with woodcuts, sections, and lists of the fossils (chiefly plants) found at each place.

Felkner, J. [Coal and Iron in Russia.] Pp. 174. 1 map. *St. Petersburg.*

Firket, Ad. Notice sur la carte de la production par commune, des carrières de la Belgique pendant l'année 1871. [On the Map showing the production of the Quarries of Belgium in 1871.] Pp. 46. *Brussels.*

——. Sur des nouveaux fossiles du système houiller. [New Coal Measure Fossils.] *Ann. Soc. Géol. Belg.* t. i. *Bull.* pp. lxxvi, lxxvii.

Patella (? n. sp.) and *Anthracosia*, from Val Benoit mine.

Frankland, Dr. E., and **J. C. Morton.** Fifth Report on the Pollution of Rivers. Pollution arising from Mining operations and Metal Manufactures. 2 vols. Fol. *London.*

Vol. i. Report and maps, pp. 52; treats of the composition of waters flowing from mines. Vol. ii. Evidence.

Gasparin, P. de. [Marl from Blancafort (Cher).] *Journ. Agric. France*, p. 172.

Analysis given. The marl belongs to the U. Cretaceous, and contains very little phosphoric acid.

Geikie, Prof. A. Geological Notes in "A Botanico-Geological Excursion into the Grampians." *Nature*, vol. x. pp. 91, 92.

The Alpine flora of Britain is best developed in the Grampians. The distribution of species, however, appears to depend more upon the general physical geography of the country than upon the nature of its rocks.

W. T.

Genth, F. A. On American Tellurium and Bismuth Minerals. *Proc. Amer. Phil. Soc.* vol. xiv. pp. 223–231.

The minerals treated of are—Native Tellurium; Tetradymite; Altaite; Hessite, Auriferous Hessite; Petzite; Syvalenite; Calaverite; Tellurate of copper and lead, a new mineral; Bismuthinite; Schirmerite, a new mineral. R. E., Jun.

Gore, J. E. A Glossary of Fossil Mammalia for the use of students of Palæontology. Pp. 51. 8vo. *Roorkee (India).*

Short notices of genera, alphabetically arranged.

Guillier, —, and **[G.] de Tromelin.** [Silurian of the Sarthe.] *Bull. Soc. Agr. Sci. Sarthe*, t. xxii. p. 585. Entered as a separate work and without abstract in the GEOLOGICAL RECORD for 1874, p. 69.

Describes *Orthonota Lebescontei* (n. sp.).

Guyard, Antony. [Flint with Sulphur and Sulphuric Acid.] *Bull. Soc. Chim. Paris.*

Hagen, H. On Amber in North America. *Proc. Boston Soc. Nat. Hist.* vol. xvi. pp. 296–302.
Gives a section in Maryland.

Harpe, Phil. de la. Note sur les Nummulites de Crimée. [Crimean Nummulites.] *Bull. Soc. Vaud. Sci. Nat.* sér. 2, vol. xiii. pp. 267–272.

Hébert, Prof. E. Note sur la couche à dents de squales découverte à Bruxelles par M. Rutot. *Ann. Soc. Géol. Belg.* t. i. *Bulletin*, pp. lxxiii–lxxv.
List of fossils (Eocene) and section.

Heer, Dr. Oswald. Om nagra fossila vaxter fran ön Sachalin. [Miocene Plants from Saghalien.] *Œfv. K. Vet. Akad. Förh.* Årg. 31, no. 10, pp. 29–31.

Helland, A. Om gehalten af Slam i Bræelve. [Amount of Mud in Glacial Rivers.] *Geol. Fören. Stockholm Förh.* Bd. ii. no. 21.

The Justedal glacier (Norway), 70 kilometres long and averaging 12 broad, is the subject of inquiry. The main conclusions are as follows:—1. On a July day the 9 outlets carry to the lakes and fjord 2 million kilogrammes of suspended materials, with 770,000 kilogrammes in solution. 2. Annual quantity, estimated close to the glacier where the contents are very variable, 180 million kilogrammes in suspension, 13 million in solution. 3. Annual quantity, estimated where rivers debouch on larger sheets of water, and where the contents are less variable, 170 million kilogrammes in suspension, 50 million in solution. At sp. gr. 2·6, 180 million kilogrammes of mud represent 69,000 cubic metres of stone as removed yearly. H. M.

Helmhacker, Rud. Geognostische Beschreibung eines Theiles der Gegend zwischen Benesov und der Sázava. [Geological Description of Part of the District between Benesov and the Sazava.] *Arb. geol. Abth. Land. Böhm.* 1 Theil, ii. Bd. Ab. 2, Theil 1, pp. 411–446, with 1 map and 1 plate of sections.

Hennessy, Henry. Note on additional Instances of the Tidal Floatation of Sand. *Proc. R. Irish Acad.* ser. ii. vol. i. no. 9, p. 554.

Hertzer, H. W. Die Quellen-Temperatur der Hartzgegend in der Richtung und Höhe zwischen Halberstadt und dem Brockengipfel. [Temperature of Springs in the Region of the Hartz, between Halberstadt and the Brocken.] Reprint from the *Programme des Gymnasiums zu Wernigerode.* Pp. 88.

Hunt, Dr. T. S. [On the crystalline rocks of the Blue Ridge.] *Proc. Boston Soc. Nat. Hist.* vol. xvi. pp. 115, 116.

——. [Stratification of Rock-masses.] *Ibid.* pp. 237, 238.

——. The Deposition of Clays. *Ibid.* pp. 302–304.

Hyatt, A. Evolution of the Arietidæ [group of Ammonites]. *Proc. Boston Nat. Hist. Soc.* vol. xvi. pp. 166–170.

Issel, Prof. A. Geologia e paleontologia, Istruzioni scientifiche pei viaggiatori. [Geological part of Scientific Instructions for Travellers.] *Rivista Marittima.*

Itier, Jules. Des Forêts Pétrifiées de l'Égypte et de la Libye, et du rôle qu'ont joué les Eaux Minérales dans les Formations Géologiques postérieures aux Dépôts des Terrains Tertiaires. [The Petrified Forests of Egypt and Libya, and the Part played by Mineral Waters in post-Tertiary Times.] Pp. 16. 8vo. *Montpellier.*

——. Des Brèches Osseuses des côtes des environs de Marseille. Pp. 5. [Annexed to the foregoing.]

Jenkinson, H. T. Practical Guide to the Isle of Man. 8vo. *London.*

Mineralogy by **B. M. Wright**, pp. 217–238, with a descriptive list of the minerals of the island, and a list of the metalliferous mines. GEOLOGY, pp. 239–248. W. W.

Johnson, M. H. The Nature and Formation of Flint and allied bodies. Pp. 16, with plate. 8vo. *London.*

Maintains that flint is an organic structure in which silica has at some stage of the decomposition replaced its isomorph carbonic anhydride. The siliceous structure thus produced has been altered by infiltration of dissolved silica, which may have crystallized in its interior. By the action of acids on thin sections, the writer has revealed the existence of organic structure in Septaria from the London Clay and Kimeridge Clay, in ironstone from the Woolwich Beds, in flints and iron-pyrites from the Chalk, in phosphatic nodules from the Gault, in the Cambridge phosphatic nodules, in clay-ironstone from the Coal Measures, and probably in the small round grains in oolitic rocks. Also remarks on the production of orbicular silica. F. W. R.

Karpinski, A. [The Geological Constitution of the Ural Mountains, near Orenburg.] *Gornoi Journ.* vol. ii. pp. 288–314, geol. map, 1 pl. (sections), 5 figs. in text.

These mountains are composed of newer Silurian, Devonian, Mountain Limestone, and Sandstones. The map extends from the Ural River to the Bilaia Kieka. A. B.

——. [The Composition of some Igneous Rocks.] *Gornoi Journ.* vol. iii. pp. 46–60.

Kneeland, S. [On the Geology of the Pacific Railroad.] *Proc. Boston Soc. Nat. Hist.* vol. xvi. pp. 375, 376. [Abstract.]

Kokscharow, N. v. Notiz über Perowskit-Krystalle. [Perowskite Crystals.] *Bull. Ac. Imp. Sci. St. Pétersbourg,* t. xx. pp. 276–292, 5 woodcuts.

Goniometrical measurements of specimens from the Ural

Kokscharow, N. v. Resultate der genauen Messungen der Schw Krystalle. [Measurements of Sulphur-Crystals.] *Bull. Ac.* *Sci. St. Pétersbourg,* t. xx. pp. 292–299, 2 woodcuts.

Specimens from Sicily, Spain, and Egypt.

La Bruyère, — de, and — Trousset. Géographie nationale, sique, politique, historique, industrielle, agricole et commerc avec la statistique la plus récente. Département de l' [National, physical, ... Agricultural, and Commercial graphy. Department of the Ain.] Pp. 60, map. 32mo. *P*

Includes slight geological description.

Lacaille, A. [Discovery of Bones of *Ursus*, &c. in the Alluviun Fontaine.] *Journal de Bolbec*, 19 Oct., and *Bull. Soc. Géol. No* t. ii. pp. 44, 45 (1875).

Lawson, William. Geography of the British Empire. Ed. 7. *Edinburgh.*

Contains remarks on the geology and physical features of the Bri Islands, and notes on the minerals of the colonies.

Liénard, F. L'Homme de Cumières pendant l'époque néolithi (âge du Renne). [Man at Cumières during the Neolithic (R deer) Epoch.] *Verdun.*

Lindsay, Dr. W. L. Recent Gold-discoveries in Scotland. *Pe shire Constitutional*, Feb. 18.

Refers to Bute and Lanarkshire.

Lortet, Dr., et E. Chantre. Études Paléontologiques dans le ba du Rhône. Période quaternaire. *Arch. Mus. Hist. Nat. L* t. i. livr. 3, pp. 73–96.

Continues the fauna of the Loess, proceeding to that of the cave of the Deps. Doubs, Saône-et-Loire, Haute-Saône, Rhône, Ardêche, Gard.

Malaise, C. Sur la découverte du *Dictyonema sociale*, Salt., de faune primordiale dans le massif de Rocroy. [Discovery of *tyonema sociale* in Revinian Ampelites at Rocroy.] *Bull. Ac. Belg.* t. xxxviii. pp. 464, 465.

Marchand, —. [On Passyite.] *Ann. Chim. Phys.* ser. 5, t. i.

Gives this name to an altered variety of flint found in the Pays Caux, in the red clay overlying the chalk. It is called " caillou pour (rottenstone) by the workmen. G. A.

Marsh, O. C. Fossil Horses in America. *Amer. Nat.* vol. viii. p. 2

A popular sketch of the modifications of the equine type in the T tiaries of America.

——. Notice of New Equine Mammals from the Tertiary formati *Amer. Journ.* vol. vii. p. 247.

Orohippus, Eocene of Wyoming and Utah : further details structure are given. *O. major*, the largest species, is described for the first time. *Miohippus annectens*, n. gen. and sp., is intermediate between *Orohippus* and *Anchitherium*; it differs from the former in having but three digits in the manus.—Miocene of Oregon. *Anchitherium anceps*, n. sp., and *A. celer*, n. sp., are also Miocene equines. *Pliohippus pernix*, n. gen. and sp. (Pliocene of Nebraska), has no lateral digits. It is distinguished from *Equus* by the large antorbital fossa, the functional first upper premolar, and the molars, which have short crowns with simple folds of enamel. *P. robustus*, n. sp., *ib.*, has longer and more complex upper molars *Protohippus avus*, n. sp., Pliocene of Oregon, is represented by teeth, which most nearly resemble those of *Anchitherium*. *Anchippus brevidens*, n. sp., Pliocene of Oregon, is described from teeth. The descent of the equines is traced through the American genera as follows:—*Orohippus*, Eocene; *Miohippus* and *Anchitherium*, Miocene; *Anchippus*, *Hipparion*, *Protohippus*, and *Pliohippus*, Pliocene; *Equus*, Quaternary. The principal successive changes relate to—1. Increase in size; 2. Increase in speed, through concentration of limb bones; 3. Elongation of head and neck, and modifications of skull. The gradations of tooth-structure and arrangement are also noted. L. C. M.

Marsh, O. C. Small Size of the Brain in Tertiary Mammals. *Amer. Journ.* vol. viii. pp. 66.

A progressive brain capacity, *pari passu* with geological time, is observed in the American Tertiary Ungulates. In *Dinoceras* (Eocene) the brain-cavity is only one eighth that of a rhinoceros. L. C. M.

Mayer, Karl. Natürliche, gleichmässige und practische Classification der Sediment-Gebilde. [Classification of the Sedimentary Formations.] A Broadsheet. *Zurich.*

A table of European formations arranged under 8 "Gebilde" or groups of beds, *e. g.* "Tertiär-Gebilde," which are divided into 57 subgroups, the names of which end alike, *e. g.* "Astian," and these again into 136 members. G. A. L.

Milner, Rev. Thos. The British Islands: their Physical Geography and Natural History. New Edition. Pp. vi, 328; woodcuts. [Not dated.]

Geological notes throughout; but the subject is especially treated in Chap. iv. pp. 81–116, The Great Geological Formations; Chap. x. pp. 287–324, Modern Geological Changes. W. T.

Mischennov, —. [Geological Observations on the Line of the Railroad from Lozovo to Sebastopol.] *Gornoi Journ.* vol. iv. pp. 170–193, 1 pl. (sections).

Mostly fossiliferous Tertiaries.

Murray, A. Report upon the Geological Survey [of Newfoundland] for the Year 1873. Pp. 69. 8vo. *St. John's.*

Physical Geography, pp. 1–17; Carboniferous Series, with sections,

pp. 17-45; Faults, pp. 45-52; Laurentian and L. Silurian, with sections, pp. 53-61; Coal, gypsum, lead- and iron-ore, pp. 61-68.
W. H. D.

Nahanik [=**G. H. Kinahan**]. Irish Salmon Rivers and their Geology. River Slaney. *Land and Water.*

Describes the course of the river and the rocks of the country it flows through. The upper part of the valley is at one side of the Wicklow and Carlow chain of hills, while the lower part is at the other, a low bank of gravelly drift preventing the water from the upper part from flowing into the Barrow. The valley crosses the strike of the rocks; yet there are no rapids or falls, as the rivercourse runs along lines of recent faults and shrinkage-fissures. G. H. K.

Nordenskiöld, Prof. A. E. Om kosmiskt stoft som med nederbörden faller till jordytan. [Meteoric Dust.] *Œfvers. K. Vet. Akad. Förh.* Årg. 31, no. 1, pp. 3-12.

Analysis of Cryoconite by **G. Lindström.**

Paisley, Rev. C. H. On the Post-Pliocene Formation near Bathurst, New Brunswick. *Canad. Nat.* n. ser. vol. vii. pp. 268-270.

Describes the Boulder Clay, Leda Clay, and Saxicava Sand (descending order). Correlates the series with those of the St. Lawrence and St. John, giving a list of fossils. R. B. N.

Paladini, L. Il nuovo mare del Sahara algerino. [The new Sea of the Algerine Sahara.] *Giornale Politico e Commercio, Messina,* no. 115. Supplement.

Pengelly, W. The Time that has Elapsed since the Era of the Cave Men of Devonshire. *Science Lectures for the People, Fifth series,* pp. 123-139. 8vo. *Manchester.*

Raewski, M. Die westliche Landes-Expedition zur Untersuchung der Boden-Beschaffenheit und Benützbarkeit in Russland. [Western Expedition to inquire into the Resources of Russia.] *St. Petersburg.*

Rath, G. v. Ueber eine Fundstätte von Monticellitkrystallen in Begleitung von Anorthit auf der Pesmeda Alpe am Monzoniberge in Tyrol. [Monticellite and Anorthite, Monzoni Mt., Tyrol.] *Monatsb. k. preuss. Ak. Wiss.* pp. 737-752, 2 pl. [See above, p. 254.]

Reclus, Elisée. Voyage aux régions minières de la Transylvanie occidentale, 1873. [Visit to the Mining-districts of W. Transylvania.] *Le Tour du monde,* vol. xxviii. pp. 48, 2 maps.

Reynès, Dr. P. Sur quelques points de l'organisation des Ammonites. [Structure of Ammonites.] *Bull. Soc. Sci. Indust. Marseille,* t. i. pp. 80-88.

Treats firstly of the changes in ornamentation in some species, and secondly of the modifications of the last whorl in some of the Ammonitidæ (*Ammonites*, *Ancyloceras*, *Scaphites*, etc.). These changes are either in the mode of the ornamentation or in the spiral relation of the whorl. The object is to point out causes which have contributed to the manufacture of many species from characters really due to age, size, and other individual conditions. G. A. L.

Reynès, Dr. P. Deux nouveaux minéraux de la mine du cap Garonne. [Two New Minerals from the Cap Garonne Mine.] *Bull. Soc. Sci. Indust. Marseille*, t. i. pp. 121–123.

The new minerals are *Fieldingite*, a variable double sulphide of lead and copper, allied to Cuproplumbite and Alisonite; and *Gregite*, a double sulphate of copper, mistaken for Lettsomite. These, with many other minerals, occur at the base of the Trias immediately above the red Permian shales, a few kilometres from Pradet near Toulon. G. A. L.

——. [The Variations, Lithological and Palæontological, observable in the same Geological Period.] *Bull. Soc. Sci. Indust. Marseille*, t. i, pp. 113–115.

Gives 3 cases illustrating the laws of varying sedimentation and the geographical distribution of animals in Oolitic times, showing, 1, Identity of sediments and fauna; 2, Diversity of sediments with identity of fauna; and, 3, Diversity of both sediments and fauna; all in rocks of the same age. G. A. L.

Roemer, Prof. F. Aus Schlesiens prähistorischer Zeit. [Prehistoric Times in Silesia.] *Verein für das Museum schlesischer Alterthümer in Breslau.* 4to. Pp. 23, pl. 2.

Rousset, A., and A. Pinet. Géographie du Jura. Topographie, statistique, administration, histoire, agriculture, industrie, commerce. [Geography of the Jura. Topography, Statistics, Agriculture, &c.] Pp. 130. 18mo. *Paris.*

Contains some geological and mining information.

Sagot, Prof. Généralités sur la Guyane. Configuration et nature du sol, distribution des eaux, végétation sauvage. [Guiana. Configuration and Nature of the Soil, Hydrography, etc.] Pp. 35. *Cluny.*

Contains brief geological information.

Sauvage, Dr. H. E. Mémoire sur les Sauriens et les Crocodiliens des Terrains Jurassiques de Boulogne-sur-Mer. *Mém. Soc. Géol. France*, 2 sér. t. x. 6 plates.

The new generic and specific names of *Morinosaurus typus* are given to a new Dinosaurian, and those of *Hœmatosaurus lanceolatus* to a Crocodilian. The following species are new:—*Cetiosaurus Rigauxi*, *Steneosaurus Bouchardi*, *S. rudis*, *S. morinicus*, *Metriorhynchus littoreus*, *Machimosaurus bathonicus*, *M. interruptus*, *M. ferox*, and *M. Rigauxi*. E. T. N.

Schmidt, Dr. C. Hydrologische Untersuchungen. *Bull. Soc. Imp. Sci. St. Pétersbourg*, t. xx. pp. 130–169.

Analyses by the author, **Dr. J. Grimm**, and others (some quoted) of waters and mud from the Aral, Caspian, White, Dead, and Frozen Seas, and several rivers and lakes. W. H. D.

Schmidt, F. Miscellanea Silurica. II. Ueber neue und wenig bekannte baltisch-silurische Petrefacten. [New and little-known Fossils from the Baltic Silurian.] *Mém. Ac. Imp. Sci. St. Pétersbourg*, ser. vii. t. xxi. no. 11, pp. 48, pls. i.–iv.

Describes amongst others the following new species:—*Asteroblastus tuberculatus*, *A. Volborthii*, *Bothriocidaris Pahleni*, *Glyptocystites sculptus*, *G. Volborthii*, and *Tetradium* (n. gen.) *Wrangeli*. W. H. D.

Seidlitz, Dr. C. v. Das General-Nivellement Esthlands. [General Levelling, Esthonia.] *Sitz. nat. Ges. Dorpat*, Bd. iii. pp. 359–379.

A few geological notes.

Selwyn, A. R. C. Notes on a Journey through the North West Territory, from Manitoba to Rocky Mountain House. *Canad. Nat.* n. s. vol. vii. pp. 193–216, &c.

The hills are covered with Drift and Erratic blocks of various rocks. Silurian Limestone boulders occur on the 1st and 2nd prairie steppes. At Rocky Mountain House the boulders are chiefly Coal Measure sandstone and ? Potsdam quartzite. Ascending the Saskatchewan the metamorphic rocks and gold disappear. Tertiary and Cretaceous silicified wood occurs near here, and 86 miles from Rocky Mt. House is a seam of coal 18–20 feet thick. Below Victoria are flagstone, limestone, and septarian clay; at Cedar Lake Silurian limestone appears, and Devonian limestone on L. Winnipegosis and Manitoba. R. B. N.

Siewert, Dr. C. Ueber einige Mineralwässer und Heilquellen der Argentinischen Republik. [Some Mineral Springs of the Argentine Republic.] *La Plata Monatsschrift*, no. 11, pp. 161–167, no. 12, pp. 177–178; and *Zeitsch. gesammt. Nat.* Bd. x. pp. 481–501.

Skene, A. J., and **R. B. Smyth.** Report on the Physical Character and Resources of Gippsland. Ed. 2. Pp. 67. 8vo. *Melbourne*.

(For notice of Ed. 1, see GEOLOGICAL RECORD for 1874, p. 155.)

Spiess, F. Physikalische Topographie von Thüringen. [Physical Topography of Thuringia.] Pp. 144, 2 maps. *Weimar*.

Part iv. deals with the geology of the country and the adjoining regions as far as the Hartz and the Rhône.

Stoppani, Prof. A. Il mare glaciale à piedi delle Alpi. [Glacial Sea at the Foot of the Alps.] *Rivista Italiana*.

Struckmann, Amstrath C. Geognostiche Skizze der Umgegend von Hannover. [Geological Sketch of the Neighbourhood of Hanover.] Pp. 26, with geological map after H. Credner. *Hanover*. A reprint from "Hannover und Umgegend. Entwickelung und Zustände seiner Industrie und Gewerbe." G. A. L.

Stuart, Dr. Charles. Anniversary Address. *Proc. Berwick. Field Club*, vol. vii. no. 1, p. 1.

Notes on the Geology of the Greenses, near Berwick, pp. 5, 6, the Blackadder and Whitadder, pp. 19-23.

Terquem, O. Recherches sur les Foraminifères du Département de la Moselle. *Paris.* Plates.

Monograph of the Foraminifera of the *Ammonites Parkinsoni* Zone, including the genera *Polymorphina*, *Guttulina*, *Spiroloculina*, *Triloculina*, and *Quinqueloculina.* E. T. N.

Thalén, R. Redogörelse för en ny method, att medelst magnetiska mätningar undersöka jernmalmsfält, jemte anförande af några i sammanhang dermed anstälda experimenter. [Account of a Method of exploring an Iron-ore District by means of Magnetic Measurements, etc.] *Œfv. k. Vet.-Akad. Förh.* Årg. 31, no. 2, pp. 5-17, pl. 1.

——. Om de isodynamiska ytorna kring en vertikal magnetstång, med tillämpning häraf vid en på magnetiska mätningar grundad undersökning af jernmalmsfält. [Application of Magnetism to the Discovery of Iron-ores.] *Œfv. K. Vet.-Akad. Förh.* Årg. 31, no. 5, pp. 7-19.

——. Om magnetiska mätningar å jernmalmsfält. [On Magnetic Measurements in an Iron-ore District.] *Œfv. K. Vet.-Akad. Förh.* Årg. 31, no. 8, pp. 3-23, pl. viii.

Theobald, —. Naturgeschichtliche Beiträge zur Kenntniss der Umgebungen von Chur. [Natural History of the Neighbourhood of Chur.] Pp. 70, map. *Chur.*

A geological chapter, with lists of minerals and analyses of mineral-springs, in a book published in remembrance of the 57th Meeting of the Swiss Naturalists at Chur. G. A. L.

Thiollier, A. La mine de Largentière et celle de Revest. [Largentière and Revest Mines.] *Bull. Soc. Sci. Indust. Marseille*, t. i. pp. 185-187.

Describes these two ancient copper and silver mines near Hyères in their now abandoned state. The débris indicate a large proportion of silver.

Toula, Prof. Dr. Fr. Eine geologische Reise nach dem Ural. [Geological Visit to the Urals.] *Jahresb. Handelsm.* Pp. 52; 1 geological map.

Vala, Jos., and R. Helmhacker. Das Eisensteinvorkommen in der Gegend zwischen Prag und Beraun. [Iron-ore between Prague and Beraun.] *Arb. geol. Abth. Land. Böhm.* 1 Theil, ii. Bd. ii. Abtheil. pp. 99-407, with 6 plates, map, and 9 woodcuts.

Villot, —. [The Reyran Coal-field.] *Bull. Soc. Sci. Indust. Marseille*, t. i. pp. 105-107.

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G. A. L.

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A. Title; B. Index map; C. Technical signs, &c.; D. Geol. colours, signs, &c., in 7 sheets. 12 Ordinary sheets (nos. 31, Rouen; 32, Beauvais; 33, Soissons; 47, Evreux; 48, Paris; 49, Meaux; 64, Chartres; 65, Melim; 66, Provins; 79, Châteaudun; 80, Fontainebleau; 81, Sens). 6 sheets of sections. G. A. L.

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The first chapters are geological and geographical.

INDEX.

NOTE.—Most of the principal localities referred to in this work are indexed under the countries to which they belong, in addition to the separate references to towns and villages; and most of the minor subdivisions of formations are also indexed under the names of the larger groups to which they belong.

[*For Index of New Species, see* pp. 342–357.]

Aach, 76.
Aachenian, 49.
Abel, Prof., 206.
Abich, Prof. H., 47.
Ablancourt, 210.
Abyssinia, 146, 397.
Acheulean, 85.
Achiardi, A. d', 206, 229, 297, 372.
Achrematite, 250.
Acidaspis, 316.
Ackermann, 47, 383.
Acropolis, 87.
Acton, R., 147.
Acy, E. d', 372.
Adams, Prof. A. L., 271.
——, W., 383.
——, W. H. D., 372, 377.
Adams Co., 120, 211.
Adelaide, 151.
Adiantites, 336.
Adlerstam, Capt. L., 187.
Afghanistan, 1.
Africa, 144, 395, 397.
——, Central, 145.
——, South, 144–146, 207, 261.
——, West, 145, 146.
Agassiceras, 312.
Agate, 241, 245.
Agricultural Chemistry, 263.
—— Society, Royal, 372.
Agriculture, 7, 201, 411.
Aigner, A., 197.
Aigues-Mortes, 82.
Ain, 101, 102, 339, 408.
Airthrey Springs, 268.
Aisne, 49.

Aix-la-Chapelle, 48, 86.
Akerman, R., 229.
Aknank, 141.
Alabama, 114, 129, 130.
Alaska, 128, 141.
Alcyonaria, 304.
Alecto, 319.
Algeria, 144–146, 188, 236, 269, 291, 301, 373, 379, 404, 410.
Algiers, 144.
Alheur, 81.
Alin, I. of, 391.
Alkaline Chlorides, 268.
Alleghany, 113.
Allport, S., 206.
Alluvial deposits, 45, 63, 89, 113, 180, 393, 400.
Alps, 48, 68, 76, 80, 91, 98, 99, 101, 103, 313, 321, 369, 412.
——, Pre-Miocene, 395.
Alsace, 78, 95, 247, 373, 392.
Altai, 140.
Altum-Artush, 141.
Alum Slates, 313.
Amazons, 127.
Amber, 294, 406.
Ameghino, F., 372.
America, 118, 125, 126, 285, 312, 373, 375, 384, 405, 408.
——, British North, 395.
——, North, 318, 319, 375, 406.
Amiens, 83.
Amiot, H., 400.
Ammon, L. von, 47.

Ammonites, 307, 312, 317, 326, 386, 407, 410.
Ammonium Oxalate, 261.
Amorphozoa, 331.
Ampelite, 408.
Amphibole, 391.
Amphicentrum, 294.
Amsterdam Island, 168.
Amu Delta, 134.
Amygdaloidal Melaphyres, 145.
Analyses, 2, 8, 10, 11, 19, 31, 34, 65, 66, 79, 85, 90, 96, 110, 114–116, 127, 129, 130, 132, 134, 137, 138, 141, 154, 159, 168, 190, 201, 206–214, 216–224, 226, 230–235, 238–240, 242–247, 249–251, 255, 258, 261, 262, 267, 401-405, 414.
Anatase, 247.
Andalusia, 81.
Andenne, 63, 337.
Anderlecht, 106.
Andermatt, 99.
Anderson, W., 197.
Anderson Valley, 128.
Andes, 131.
André, G. G., 197.
Andrew, T., 1.
Andrews, Prof. E., 271.
——, Prof. E. B., 113, 332, 334.
——, Dr. T., 229, 267.
Andrewsite, 240, 251.
Anger, F. A., 206.
Anglesite, 236.
Angola, 146.

Anhydrite, 262.
Animal Life in the Deep Sea, 190.
Anomalodonta, 297.
Anorthite, 241, 410.
Ansted, Prof. D. T., 400.
Anstie, J., 361, 362.
Antelope-Deer, 276.
Anthracite, 16, 128, 129, 243.
Antimony, 81, 119, 156, 159, 162, 230, 231, 249, 264.
Antwerp, 55, 105.
—— Roads, 47.
—— Sands, 67.
Apatite, 53, 232, 262.
Apennines, 64, 99.
Aphthalose, 257.
Apophyllite, 260.
Aporrhaidæ, 307.
Appalachians, 115.
Appleton, 373.
——, E., 198.
Apuan Alps, 99.
Arabia, 140.
Aralo-Caspian Depression, 177.
Arcelin, M., 60.
Archæology, 204.
Archer, Prof., 205.
Arctic Regions, 109–112, 181, 184, 185, 187, 226, 234, 271, 324, 338, 414.
—— Shell-bed, 329.
Arctosaurus, 271.
Ardèche, 286.
Ardennes, 49, 77, 208, 278.
Arenig Rocks, 18, 311.
Argentine Mine, 125.
—— Republic, 246, 372, 401, 412.
Ariège, 389.
Arietidæ, 407.
Arizona, 132.
Arkansas, 264.
Arrho, 146.
Arrowsmith, A. B., 164.
Artesian Wells, 92, 145, 385, 386.
Arthur's Seat, 25.
Artois, 395.
Arvicola, 287.
Arzruni, Dr. A., 48.
Åsar, 184.
Ash-rain, 212.
Ashe County, 393.
Ashenden, C., 203.
Ashes, 219.
——, Volcanic, 224.
Asia Minor, 72, 141, 396.
Asphalt, 243.
Asphaltic Coal, 124.
Aspidiophyllum, 323.
Assam, 137.
Asteria Limestone, 326.
Asteroidea, 321.
Asturias, 68.
Ath, 86.
Athabaskaw-Mackenzie Valley, 128.
Athens, 87.
Atlantic, 382.
Atterberg, A., 230.
Atthey, T., 271.
Attwood, M., 230.
Aube, 300.
Auchinlea, 12.
Aude, 102, 358.
Audouard, 267.
Augite-porphyries, 210.
Aulacoceras, 307.
Aulopora, 319.
Auriferous Beds. (*See* Gold.)
Aust Cliff, 2.
Austin, Fort-Major T., 297.
Australia, 147, 148, 158, 218, 262, 272, 284, 289, 304, 328, 336.
——, South, 153, 305, 358.
——, West, 150, 152, 163, 358.
Austria and Hungary, 20, 47, 54, 57, 63–66, 69–74, 76, 79–81, 84, 85, 87–93, 96–99, 101–104, 107, 108, 184, 197, 204, 206, 207, 209, 210, 212, 215, 217–219, 222, 224, 230–232, 238, 239, 241, 242, 245, 248, 249–252, 255, 257, 258, 261, 262, 264, 272, 273, 281–283, 290, 294, 298, 307, 309–311, 313, 317, 325, 330, 340, 358, 383, 402, 404, 406, 410, 413.
Autun, 339.
Autunite, 233.
Auvergne, 57, 391.
Aveline, W. T., 40, 360, 370, 371.
Avicula contorta, 58.
Avignon, l'Abbé, 383.
Axerio, G., 400.
Azen, 358.
Babanek, F., 231.
Bachmann, Prof. I., 48, 271, 383.
Baden, 391.
Bagnères-de-Luchou, 54.
Baily, W. H., 12, 297.
Bakonlovski, 401.
Bakony, 212.
Bakonywald, 69.
Baku, 386.
Bâle, 86, 378.
Balerna, 51.
Balfour, Dr. J. B., 165.
Ball, V., 134.
Ballycastle, 28, 40.
Ballynahinch Spa, 267.
Baltic, 382, 390, 412.
Baltzer, Dr. A., 48, 49, 99, 207.
——, Dr. B., 231.
Bamber, H. K., 383.
Bamle, 255.
Banbury, 2, 323.
Barachon, 207.
Barbadoes, 173, 304.
Barbot de Marny, N., 134, 401.
Barcena, M., 114, 231, 297, 401.
Barkas, W. J., 272.
Barnett, A. K., 240.
Barnsley, 15.
Baroulier, M., 400.
Barral, J. A., 207, 401.
Barré, 207.
Barrois, Dr. C., 3, 4, 49, 50, 272, 297.
Barrow, River, 31.
Barstow, Dr. W., 231.
Bar-sur-Seine, 51.
Bartonian Limestone, 106.
Barytes, 262, 391.
Basalt, 2, 15, 111, 173, 175, 176, 178, 207, 212, 215–217, 220, 224, 245, 402, 416.
Basse-Deûle, 57.
Bassett, A., 4.
Batavia, 385, 386.
Bates, H. W., 163, 414.
Bath, 44.
—— Waters, 268.
Batheaston, 268.
Bathmodon, 275.
Baths, 382.
Bathurst, 410.
Batrachia, 274, 275, 279, 332.

Battle, 2.
Bauer, W., 231.
Baumhauer, H., 232.
Bauxite, 207.
Bavaria, 61, 71, 108.
Baxa Beds, 138.
Bayan, 297, 298.
Beaches, 186.
Beachy Head, 29.
Beaume-les-Dames, 415.
Beaumont, E. de, 170, 171.
Beaupréau, 267.
Beck-Bernard, C., 401.
Becker, Dr. E., 298.
Bedfordshire, 26.
Beghin, 207.
Beilby, J. W., 198.
Beirût, 199.
Belemnites, 50, 106.
Belfast, 229.
Belgium, 47, 49, 53, 55, 56, 58, 61, 63, 67, 73, 77, 78, 81, 85, 89, 95, 96, 105, 106, 196, 198, 208, 219, 220, 238, 267, 268, 272, 282, 291, 294, 298, 315, 335, 337, 389, 393, 402–405, 414.
Beliben, 401.
Belinois, 68.
Belknap, Gen. W. W., 401.
Bell, A., 298.
——, J. L., 114, 416.
Bellardi, Prof. L., 401.
——, L., 298.
Belle-Isle-en-Mer, 244.
Bellerophon, 330.
Bellsound, 110.
Belluno, 172.
Beloe, C. H., 198.
Belowda Hill Mine, 14.
Belstone Consols, 37.
Belt, T., 180, 181, 189.
Belvedere Sands, 294.
Beneden, P. J. van, 272.
Benesov, 406.
Benoit, E., 51.
Bentham, G., 334.
Beraun, 107, 413.
Berendt, Prof., 366, 383.
Berg, Dr. K., 114.
Bergen Stift, 93.
Berkshire, 24.
Bern, 48.
Bernese Alps, 103.
Berry, 60, 303.
Berthelin, G., 51.
Berthelinia, 301.
Berthoud, E. L., 115.
Berweth, F., 232.
Berwick, 237
Berwickshire, 37
Beryls, 252, 396.
Besançon, 57, 415.
Bessels, Dr., 109, 112.
Bessemer Steel, 230.
Best, E., 200.
Bewick, T. J., 198.
Beynat, 358.
Beynes, 96.
Bianconi, G. A., 51.
Bibliographic Lists, 22, 25, 40, 63, 154, 168, 235.
Bientina, 100.
Billings, E., 313, 401.
Bingera, 155.
Bingmann, E., 51.
Binney, E. W., 401.
Binnie, A. R., 199.
Biotite, 248.
Bird, J. L., 165.
Birds, J. A., 4, 5.
Birds, 272, 276, 287, 296.
Bir Keraui, 269.
Birresborn, 269.
Biscay, 105.
Bischof, F., 52, 233.
Bischoff, W., 163.
Bismuth, 159, 201, 230, 405.
Bitter Spar, 238.
Bittner, A., 65, 298.
Bitumen, 233.
Bituminous Schists, 66.
Black, Prof. J. G., 154.
Blackburn, 22.
Blackdown, 4.
Black Hills, 125.
Blackpool, 11.
Black Sea, 382.
Blair Country, 264.
Blake, J., 207.
——, Rev. J. F., 5, 6, 292.
——, Prof. W. P., 398.
Blancafort, 405.
Blanford, H. F., 134, 135, 144, 258.
——, W. T., 135.
Bleicher, 144, 373.
Bleiglanz, 265.
Blomberg, A., 369.
Blowing Sand, 188.
Blowpipe, 241, 253, 258, 261.
Blue Ridge, 119, 406.
Böckh, J., 273.
Bohemia, 47, 57, 63, 197, 207, 224, 242, 336, 391, 402, 404.
Böhmisch-Brod, 92.
Bohni, 282.
Bois-du-Rocher, 85.
Boitza, 92.
Bole, 245.
Bologna, 64, 274.
Bolton, 20.
Bône, 192.
Bone-Cave, 30, 33. (*See* Cave.)
Bonn, 227.
Bonney, Rev. T. G., 6, 180, 183.
Bonwick, J., 148.
Booth, B. S., 148.
Boracic Acid, 269.
Borate, Mineral, 255.
Bordeaux, 277.
Borden, Prof. W. W., 399.
Bořicky, Dr. E., 207, 402.
Borings, 53, 57, 67, 92, 145, 385, 386.
Boring Mollusca, 31.
Borneo, 166, 168, 299, 337.
Bornholm, 69.
Borre, A. P. de, 298.
Borrowdale, 198.
Bos, 290.
Bosnia, 48.
Boston, 130, 268.
Botella, F., 52.
Bothriospondylus, 281.
Botryopteris, 339.
Bott, A., 6.
Böttger, Dr. O., 299.
Botti, U., 52.
Boué, Dr. A., 52, 180.
Bouhy, V., 199.
Boulder Clay, 17, 22, 23, 28, 35, 181, 186.
Boulders, 14, 29, 33.
Boulger, G. S., 6, 373, 383.
Boulogne-sur-mer, 392, 411.
Boulonnais, 86, 291.
Bourbon, 166, 386.
Bourbonne-les-Bains, 235, 236.
Bourg, 207.
Bourg d'Oisans, 251.
Bourguignat, J. B., 273.

Boutillier, L., 52.
Bowstead, 200.
Brachiopods, 298, 302, 316, 403,
Brachydiastematherium, 273.
Brachyura, 298.
Bracquegnies, 56.
Bradley, Prof. F. H., 115, 367.
Brady, Sir A., 403.
——, H. B., 299.
Brandt, Prof. J. F., 273, 402.
Braun, A., 181, 334.
Bravender, J., 200.
Brazil, 114, 121, 125, 242, 254, 310, 312, 321.
Breccia, Osseous, 94, 407.
Breckinridge Co., 379.
Brest, 65.
Breton, Cape, 388, 395.
Brevig, 253.
Brewster, 235.
Brezina, Dr. A., 233.
Briart, A., 53, 56, 58, 61, 402.
Brick-earth, 206, 396.
Brick-hill, 26.
Bridge of Allan, 268.
Bridlington, 24.
Brisbane, 389.
Bristol, 2, 8, 38, 16, 286, 358.
Bristow, H. W., 40, 53, 359.
Britain, 375, 408.
British America, 113–115, 117, 118, 121, 122, 128, 129, 262, 263, 318.
—— Guiana, 115.
—— Isles, 187, 409.
—— Seas, 192.
Brittany, 65, 244, 303.
Britton, J. B., 384.
Broadhead, G. C., 114, 133, 233, 384.
Brocken, 406.
Brockway, C. J., 115.
Brodie, Rev. P. B., 6, 299.
Brögger, W. C., 53, 75, 299, 300.
Broin, 206.
Brongniart, A., 334, 339.
Brook, 292.
Brooke, Sir V., 273.
Brookite, 247.
Brown, A. J., 170, 384.
Brown, C. B., 115.
——, J. C., 144.
——, Dr. R., 109, 112, 181, 233.
——, T. F., 7.
Browne, 156.
Browning, A., 207.
Brush, G. J., 233.
Brusina, S., 325, 402.
Brussels, 61, 78, 95, 106, 220, 391, 393, 406.
Bruxellian, 96, 220.
Bryce, Dr. J., 373.
Brylinski, 384.
Bryozoa, 315.
Bucaille, E., 384.
Buccinum, 387.
Buchanan, 156.
Buckman, Prof. J., 7.
Budleigh Salterton, 327.
Buffalo, 290.
Buffalo Town, 308.
Building-stones, 204.
Bukowina, 88.
Bunter, 244.
Burbank, L. S., 402.
Burkart, Dr. J., 233.
Burmah, 137, 173, 230.
Burnett, 152, 389.
Burnley, 22.
Burnot, 337.
Burns, D., 8, 359, 362, 365.
Burrows, H. A., 273.
Burthe, L., 402.
——, P. L., 53.
Burton, Capt. R. F., 54, 121, 170, 384.
Busk, Prof. G., 30, 35, 273.
Bute, 14.
Butler, A. J., 322.
Butterflies, 322.
Byssacanthus, 272.

Cachar, 137.
Caen, 308.
Cairo, 288.
Calais, 12, 393.
——, Pas de, 392.
Calamine, 54.
Calamites, 338.
Calamodon, 276.
Calcaire Grossier, 56, 83, 84, 280.
Calcic Carbonate, 173.
Calcite, 254, 261, 391.
Caldbeck Fells, 242.
Calderon, S., 54, 144.
Caliche, 250.
California, 116, 117, 125, 132, 239, 285, 302, 404.
Callard, T. K., 373.
Callovian, 102, 397.
Camberwell, 6.
Cambrian, 12, 18–21, 58, 78, 90, 107, 118, 119, 123, 125, 130, 138, 175, 253, 299, 311, 362, 363, 367, 369, 376, 404.
Cambridge, 25, 245.
Cambridgeshire, 6, 13, 25, 38.
Camels, 276.
Cameron, Lieut., 145.
Campbell, C. R., 366.
Campbell-Brown, Dr. J., 207.
Campsie Fells, 45.
Canada, 113, 114, 121, 123, 318, 403.
Canary Isles, 144, 219.
Cancer, Distribution of, 18.
Candolle, A. de, 335.
Canidæ, 273.
Cannel Coal, 71, 392.
Cannock Chase, 30.
Cañons, 128.
Cape Breton, 323, 388, 395.
Cape La Hève, 392.
Capellini, Prof. G., 54, 274, 402.
Cape of Good Hope, 144, 146, 261, 336, 383.
Capra, 282.
Capron, H., 398.
Carboniferous, 1, 2, 4, 7, 8, 10–13, 15–17, 20–30, 32, 34, 36–38, 41, 45, 46, 48, 50, 55, 57, 58, 61, 65–68, 71, 76, 77, 79, 87, 93, 96, 99, 104, 105, 109, 110, 113, 114, 118, 119, 125–131, 133, 134, 140–142, 148, 150, 154, 156, 158, 159, 168, 175, 191, 198, 204, 218–221, 233, 261, 268, 271, 272, 274, 278–280, 281, 284, 287, 292, 295–299, 305–308, 311, 312, 323, 324, 328–330, 334, 335, 337–340, 358–371, 384, 389, 398, 404, 407, 409, 412, 414.

Carboniferous Limestone, 61, 88, 395.
Carbonite, 264.
Carinthia, 264.
Carlisle, 24.
Carlsson, G. A., 369.
Carne, E. T., 8, 208.
Carnivora, 275, 276.
Carolina, 383, 391.
——, North, 171, 402.
Carpathian Rocks, 52, 88.
Carpenter, Dr. W. B., 181, 190, 300, 382.
Carrara, 48.
Carruthers, J., 170.
Carter, Dr. H. J., 300.
Carthagena, 82.
Cartsdyke, 329.
Cartwright, F. L., 199.
Caspian, 177.
Cassel, 383.
Cassidaria, 307.
Castillo, A. del, 233.
Castleton, 33.
Castracane, Count, 334.
Castrocaro, 315.
Catskill Mountains, 121.
Caucasus, 47, 62, 63, 222, 387.
Cavalli, G., 384.
Cave Men, 26, 410.
Caves, 2, 6, 17, 26, 30, 32, 33, 39, 91, 93, 130, 141, 148, 152–155, 158, 272, 273, 280, 282, 285, 290, 291, 378, 383, 385.
Cavities, Natural, 102.
Celestine, 246, 264.
Cement, 197.
Cement-stones, 206.
Cenomanian, 50.
Cephalopoda, 327.
—— Bed, 7.
Ceratites, 301.
Ceratodus, 293.
Cervus, 282, 388.
Cetacea, 272, 295, 402.
Cetiosaurus, 288.
Cetotheria, 274.
Chabasite, 236.
Chaberton, 66.
Chætetes, 319.
Chalcopyrite, 235.
Chalk, 3, 16, 31, 56, 57, 103, 179, 211, 282, 294, 303, 340, 393, 401.
Chalk-flints, 328.
Chalkosiderite, 251.
Chalkosite, 235.
'Challenger' Expedition, 168, 191, 380.
Chambeyron, L., 165.
Chambrun de Rosemont, De, 54.
Chamounix, 47.
Champeaux, 327.
Champion Bay, 150, 151.
Chancourtois, A. E. B. de, 54, 170, 373.
Channel Tunnel, 4, 10, 18, 40, 46, 48, 61, 383.
Chantérac, C. de, 165.
Chantonnay, 228.
Chantre, E., 285, 408.
Chapman, Prof. E. J., 115.
——, E. T., 414.
Charnwood Forest, 21.
Chase, 116.
Chatanooga, 114.
Chaussat, Dr. J. B., 335.
Chavannes, 99.
Cheddar, 2.
Cheirolepis, 294.
Chelle, M., 54.
Chelles, 375.
Chellonneix, E., 385, 393, 394.
Chelonia, 294.
Cheltenham, 29.
Chemical Essays, 209.
—— Geology, 376.
Chemnitzia Limestone, 321.
Chemung Group, 331.
Cher, 405.
Cherbourg, 105,
Chesil Bank, 16, 186.
Chestnut-trees, 338.
Chevron, L., 208.
Chiappori, A., 335.
Chile, 114, 127, 239, 261.
China, 135, 166.
Chlorastrolite, 243.
Chlorite, 243, 253.
Chloritic Chalk, 108.
—— Marl, 38.
Chloritil, 241.
Choffat, P., 55.
Chondrodite, 235.
Chorley, 22.
Chott District, 146.
Chotts, 145.
Christy, H., 376.
Chrome-iron, 236, 253, 259.
Chromium, 245.
Chrysolite, 254.
Chur, 413.
Church, Prof. A. H., 190, 208, 233, 234.
Chydenius, J. J., 234.
Cincinnati, 312, 316.
—— Formation, 330, 331.
Cinnabar, 162.
Ciply, 56, 89, 282.
Clar, Prof., 74.
Clare, 269.
Claremont Hill, 213.
Clarite, 257.
Clark, D. R., 199.
Clarke, Rev. W. B., 148, 156, 157, 165.
Clavulina, 309.
Clay, 86, 203, 209, 216, 218, 220, 406.
Clifton, 31.
—— College Museum, 229.
Climate, 184, 186–188, 194, 196.
Clinton Formation, 330, 331.
Clitheroe, 22.
Cnemiornis, 289.
Coal, 15, 16, 26, 28, 71, 96, 114, 116, 121, 123, 124, 129, 139, 147, 150, 156, 168, 198–200, 202, 207, 214, 218–221, 261, 282, 307, 338, 377, 379, 384, 388–391, 396, 397, 399, 401, 405.
—— Basins, 68, 404.
—— Fields, 2, 7, 8, 17, 21, 22, 36, 58, 65, 76, 87, 104, 113, 114, 134, 139, 330, 383, 385, 390, 392, 396, 414, 415.
—— Measures, 37, 38, 56, 67, 69, 71, 77, 93, 105, 268, 272, 274, 284, 295, 298, 331, 332, 334, 336, 337, 340, 365, 366, 388, 393, 395, 405.
—— Mining, 2, 48, 64, 86, 197, 209, 385, 388.
——, Brown, 162.
Coalisland, 2.
Coast-lines, 8, 29, 187.
Cobalt, 201.
Coccoliths, 303.
Cogels, P., 55.
Cohen, Dr. E., 144.
Coke, 414.
Colchester, 10.

Coldingham, 35.
Cole, G. F., 116.
Colladon, Prof. D., 55.
Collett, Prof. J., 396.
Collins, J. H., 199, 234, 385.
Collot, L., 55.
Colorado, 115, 119, 122, 124, 131, 132, 253, 316, 323, 390.
—— River, 128.
Colson, C., 208.
Columbia, 221.
Columnar Sandstone, 14.
—— Structure, 215.
Comines, 63.
Compter, G., 335.
Comstock Lode, 230.
Concretions, 193.
Condon, Rev. T., 385.
Condorrat, 359.
Condroz, 85, 337.
—— Sandstone, 58.
Congeria, 317.
—— Beds, 54, 89, 108, 325, 402.
Congleton Edge, 36.
Conglomerate, 81.
Congo, River, 146.
Conifers, 335, 339.
Connecticut, 211, 243, 303.
Conrad, J., 212.
——, G A., 300.
Constantine Sahara, 145.
Contejean, Prof. C., 373.
Continents, 177, 178.
Continent, Indo-Oceanic, 134.
Coode, Sir J., 8.
Cook, E. T., 55.
——, Prof. G. H., 116.
Cook Strait River, 149.
Cooke, Prof. J. P., 234.
——, Prof. J. P., jun., 234.
Cookesley, T. H., 253.
Coombes, 183.
Cooper, G. C., 145.
——, Dr. J. G., 116, 117.
Cope, Prof. E. D., 117, 132, 274–277, 332, 385, 402.
Copper Ore, 36, 37, 79, 82, 85, 89, 94, 119, 121, 123, 126, 139, 142, 146, 153, 155, 159, 162, 201, 230, 238, 242, 244, 245, 247, 249, 261, 363, 369, 393, 398.
Coppi, F., 55.
Coprolite, 245.
Coquand, H., 55, 99.
Coralline Oolite, 55.
Corals, 190, 192, 297, 298, 303, 312, 319, 323, 331.
Coral Deposits, 144.
—— Reefs, 165.
Cordella, A., 199.
Cordierite, 206, 229.
Cordoba, 255.
Corner, A., 166.
Cornet, F., 53, 56, 58.
Corniferous Limestone, 331.
Cornish, T., 8.
Cornwall, 1, 7, 34, 36, 37, 187, 202, 204, 234, 253, 278, 289, 320, 327, 381.
Corrèze, 358.
Corrib, Lough, 215.
Corsehill Stone, 204.
Corsica, 58, 85.
Cortazar, D. de, 56.
Cortina, 72.
Coryell, M., 385.
Coryphodon, 295.
Cos, 87, 209, 324.
Cosmical Physics, 195, 196.
Cossa, Prof. A., 403.
Cossham, H., 8.
Cossigny, A. E. B. de, 170.
Costa, V., 374.
Costa Rica, 117, 120, 216.
Côte-d'Or, 82, 206.
Cotentin, 60, 105.
Cotta, Prof. B. von, 57, 374, 414.
Cotteau, G., 57, 300, 301.
Cotton, Gen. F., 199.
Cotyloderma, 316, 329.
Couchman, W. G., 164.
Coues, E., 277.
Coughtrey, Prof. M., 154.
Coums, 182.
Courtiller, 403.
Coutts, J., 9.
Coventry, 32.
Cox, 133.
——, E. T., 399.
Coxe, E. B., 117.
Crag, 24.
Craig, T., 9.
Crawford, J C., 149.
Crayford, 29.
Credner, G. R., 301.
——, Prof. H., 57, 208, 412.
Creeps, 170.
Crépin, F., 335.
Crespin Concession, 87.
Cresson, C. M., 384.
Creswell Crags, 30, 273.
Cretaceous, 2–4, 6, 10–13, 16, 18, 21, 25, 26, 29, 31, 35, 36, 38, 40, 41, 43, 45, 46, 48–50, 52, 53, 56, 57, 60, 61, 63, 70, 80–82, 87–89, 93, 95, 102–106, 108–110, 117–120, 125, 127–129, 131, 132, 134, 139, 141, 144, 148, 150, 154, 179, 190, 193, 200, 203, 204, 208, 211, 218, 258, 263, 272, 274, 275, 282, 291, 294, 296, 298, 300, 301, 303, 307, 310, 312, 314–317, 320, 321, 326, 328, 329, 340, 358, 362–364, 369, 376, 389, 394, 401, 403, 405, 407, 412.
Creuse, 335.
Creusot, 104.
Crie, L., 335.
Crimea, 406.
Crinoids, 331.
Croatia, 72.
Crocodilia, 282, 411.
Croft, T., 194.
Croix Polinard, 95.
Croll, J., 174, 181, 194.
Cronquist, A. W., 209.
Cronstedite, 245.
Crosby, Rev. Dr. H., 374.
Cross, Rev. J. E., 9.
Crosse, H., 301.
Crosskey, Rev. H. W., 9.
Croydon, 13, 30.
Cruise, R. J., 363.
Crussol, 386.
Crustacea, 297, 308, 326.
Crutwell, A. C., 10.
Cryoconite, 410.
Cryptosaurus, 292.
Crystalline Rocks, 208, 406.
Crystallography, 234, 247, 248, 255, 256.
Crystals, 243, 251, 259, 391, 407, 408.
Ctenodus, 271, 287.

Cubich, Dr. G., 403.
Cuença, 52.
Culm-flora, 340.
Cumberland, 6, 42.
—— Co., 385.
Cumières, 408.
Cupreous Iron-pyrites, 242.
Cuprite, 238.
Currents, 182.
Cushendall, 2.
Cutch, 375.
Cuzom, 207.
Cwms, 185.
Cycadeæ, 334, 338, 339.
Cyllene, 325.
Cystiphyllum, 318.

Dafla Hills, 137.
Daglish, T., 10.
Dakota, 125.
Dakyns, J. R., 10, 22, 181, 360, 361.
Dala Valley, 383.
Dáling Beds, 138.
Dall, W. H., 302.
Dalmas, 174.
Dalmatia, 98.
Dalton, 156.
——, W. H., 10, 361.
Dames, W., 335.
Damúda Beds, 134, 138.
Dana, E. S., 235, 237.
——, Prof. J. D., 117, 118, 170, 181, 190, 209, 213, 235, 237, 277, 374.
Danby, T. W., 241.
Danton, 415.
Dantzig, 95, 290.
Danube, 76, 183.
Danvers, F. C., 10.
Dárjíling, 138.
Darlet, 385.
Dart, 393.
Dartmoor, 1.
Darwin, Port, 151.
Darwinian Theory, 320.
Daubrée, Prof., 57, 109, 235, 236, 255.
Dauphiné, 80, 246.
Davey, E. C., 10.
David, l'Abbé A., 135.
Davidson, J., 237.
——, T., 302, 403.
Davies, D. C., 11.
——, T. G., 11.
——, W., 403.
Davis, J. E., 11.
——, Dr. W. S., 374.
Dawkins, Prof. W. B., 33, 150, 277.
Dawson, G. M., 118, 303, 403.
——, Dr. J. W., 118, 181, 300, 302, 335, 374.
Deane, Rev. G., 171, 195, 237.
De Boos, 156.
Debray, H., 57.
Decapoda, 326.
De Cessac, 128.
Dechen, H. von, 385.
Décocq. C., 303.
Delacroix, M., 57.
Delafontaine, 277.
Delage, M., 57.
Delagoa Bay, 144.
Delaire, A., 191, 416.
Delaware Co., 234.
Delesse, Prof. A., 58, 209, 237.
Delestre, E., 404.
Delfortrie, 277.
Delphinus, 277.
Delta, 134, 183.
Demavend, 269.
Denmark, 57.
Denudation, 15, 61, 186, 188, 395.
Deposition of Beds, 192, 406.
Depression of Land, 66.
De Rance, C. E., 11, 22, 109, 364.
Derbyshire, 33.
Derry, 27.
Deschmann, K., 374.
Des Cloiseaux, M., 237, 238.
Deslandes, J., 400.
Desmarets, N., 12.
Desor, Prof. E., 58, 388.
Desplace, 404.
Deville, C. St.-C., 171, 211.
Devonian, 1, 7, 14, 24, 34, 36–38, 43, 46, 57, 58, 65, 67, 68, 77–81, 83, 85, 90, 94, 105, 110, 118, 124, 127, 140, 148, 156, 159, 204, 224, 272, 278, 286, 287, 289, 292, 310, 313, 315, 316, 318, 320, 321, 327, 328, 331, 335, 337, 358, 359, 362, 389, 404, 407, 408, 412.
Devonshire, 1, 4, 16, 32, 33, 41, 192, 198, 202, 204, 206, 410.
Dewalque, F., 238.
——, Prof. G., 58, 269, 278, 376, 404.
Diabantite, 243.
Diallogite, 238.
Diamonds, 141, 145, 146, 155, 156, 168, 238, 261.
Diamond-boring, 4, 92.
Diatomaceæ, 334.
Dichroite, 264.
Dickson Co., 227.
Dicotyles, 284.
Dictyonema, 408.
Didelot, L., 278.
Dieu-de-Marcq, 385.
Dieulafait, Prof. L., 58, 238.
Dijk, P. van, 385, 386.
Diluvium, 54, 57, 383, 387.
Ding-dong Mine, 244.
Dinornis, 289.
Dinosaur, 292.
Dinotherium, 271.
Diopside, 391.
Diprotodons, 284.
Disco, 226.
Disco Island, 109.
Disease and Geology, 18.
Disintegration, 184.
Dismal Swamp, 132.
Dittmarsch-Flocon, 386.
Dixon, J. S., 12.
Dobson, A. D., 150.
Dodge, W. W., 119, 303.
Doell, E., 238.
Doelter, Dr. C., 59, 209, 210, 239, 254.
Doering, Dr. A., 404.
Dogs, 275.
Doleryte, 215.
Dollfus, G., 60, 105, 303, 374, 386, 393.
Dolomites, 72, 85, 210, 213, 391.
Dolomitic Limestone, 66.
Dolphin, 277.
Domeyko, 239.
Donetz, 389.
Donzenac, 358.
Doratorhynchus, 292.
Dorn, Prof. E., 60, 171.
Dorpat, 389.
Dorsetshire, 329.
Doubs, 57, 93.
Douvillé, H., 60, 303.
Dover, Straits of, 392.
Down, Co., 41, 397.
Draper, Dr. J. W., 374.

Drasche, Dr. R. von, 166, 226, 239, 386.
Dredge, J., 182, 205.
Drenovec, 72.
Drew, F., 40, 135.
Driffield, 31.
Drift Deposits, 21, 27, 29, 32, 54, 57, 96, 132, 181, 290, 387, 389, 393, 395, 397, 402.
Drinker, H. S., 386.
Dropsy, Distribution of, 18.
Drown, Dr. T., 373.
Druid Stones, 37.
Duárs, 138.
Dublin Bay, 209.
Ducrost, M., 60.
Dufet, H., 303.
Dugshai Beds, 143.
Dumas, E., 61, 239, 303.
Dumbarton, 359.
Dumbleton, H., 278.
Dumont, 335.
Dumortier, E., 386.
Duncan, Prof. P. M., 136, 278, 304.
Dundalk, 213.
Dunes, 199.
Dungannon, 2.
Dunkirk, 92.
Dunmore, 17.
Du Noyer, G. V., 12, 363.
Dupont, E., 58, 61, 317.
Du Pré, Prof. W., 171.
Durand, H., 61.
Durand-Claye, L., 210.
Durangite, 237.
Durfort, 280.
Durham, 359.
Dutch East Indies, 265.
Dutton, C. E., 171.
Duveyrier, H., 145.
Dykes, 38.

Earnscleugh, 154.
Earth, 179, 180, 194–196, 387.
Earthquakes, 171-173, 178, 179.
Earthworks, 182.
Eastbourne, 36.
Eastern Counties, 16.
Eatington, 6.
Eaton, Rev. E. A., 166.
Ebray, T., 61, 171, 210.
Echinodermata, 300, 301, 313, 314, 321, 326, 329.
Eck, A., 211.
——, H., 61.
Ecuador, 129, 133, 219.
Eden, C. H., 163.
—— Valley, 14, 29.
Edinburgh, 25.
Edwardstown, 147.
Eem Valley, 389.
Eemian, 69.
Egan, F. W., 363.
Eggenburg, 64.
Egleston, Prof. T., 211, 239.
Egozcue y Cia, J., 278.
Egypt, 270, 288, 407, 408.
Ehrenberg, C. G., 304.
Eichkogel, 103.
Eichler, W., 386.
Eifelian, 335.
Eisen, G., 404.
Ekman, F. L., 182.
El Araïch, 144.
Elba, 206, 229.
Elbruzzo, 396.
Elephas, 285.
Elevation, 178.
Elliot, Prof. J., 404.
Ellis, W. H., 126.
El Pedroso, 94.
Emery, 245.
Emmons, S. F., 369.
Enargite, 247, 261.
Enchanted City, 52.
Encrinital Limestone, 56.
Encrinites, 321.
Endlich, Dr. F. M., 119.
Endrick River, 23.
England, 1-16, 18, 20–26, 28–46, 48, 61, 179, 181, 182, 185–189, 190–192, 194, 198, 200–204, 206, 208, 218–220, 223, 233, 234, 240, 242, 244, 245, 246, 251, 253, 263, 268, 270–273, 277, 278, 281, 282, 286, 288, 289, 292, 293, 295–298, 305, 307, 312-314, 316, 319, 320, 323, 329, 340, 358–362, 364, 365, 379, 381, 393, 394, 396, 397, 403, 405, 407–410, 416.
Enhydros, 254.
Enneberg, 72.
Entomostraca, 312, 328.
Eocene, 2, 3, 6, 10, 13, 21, 24, 31, 37, 41, 43, 45, 47, 51 53, 56, 57, 60, 61, 63, 67, 69, 70, 73, 78–81, 83, 84, 88, 92, 93, 95, 96, 98, 103–106, 117–119, 125, 128, 131, 132, 135, 137, 140, 143, 144, 168, 273, 275, 276, 279, 280, 285, 288, 291, 295–299, 301, 304, 313, 314, 316, 330, 337, 358, 362, 364, 383, 402, 403, 406–408.
Eolites, 187.
Eophyton, 335.
Eotherium, 288.
Eozoon, 300.
Eperies, 81.
Epidote, 232.
Equador, 133.
Equisetums, 338.
Equus, 289, 290, 408.
Erdmann, E., 62.
Ereré, 310, 321.
Erith, 29.
Erosion, 122.
——, Glacial, 180, 182, 183.
——, Tidal, 187.
——, Wind-drift, 182.
Erratic Blocks, 9, 86, 387, 389, 396.
Eruptive Rocks, 210, 216, 217, 389. *See* Igneous.
Escarpments, 185.
Escurial, 219.
Esk, South, 15.
Eskers, 183, 184.
Essex, 403.
—— Co., 115.
Esthonia, 412.
Estremadura, 230, 252.
Etheridge, R., 9, 22, 25, 40, 112, 394.
——, R., jun., 161, 278, 305, 336.
Etheridge Gold-field, 155.
Etna, 179.
Ettingshausen, Dr. C. F. von, 74, 336.
Eure, 88.
Eurite, 220.
Euritic Rock, 217.
Europe, 20, 71, 73, 92, 273, 290, 325, 362, 376, 402, 416.
Eurypterid, 101.
Eusarcus, 308.
Evans, C., 6, 13.
——, Dr. J., 111, 374.
——, M., 200.
Evans Town, 316.

Everwijn, H., 200.
Evolution, 282, 302, 317, 320, 407.
Exe, River, 32.
Exeter, 1, 33, 393.

Fabre, G., 62.
Fabri, B., 191.
Fairley, W., 71.
Falb, R., 171.
Fallow Deer, 273.
Falsan, A., 62, 339.
Faluns, 277, 325.
Faroe Isles, 207.
Fassaïte, 240.
Fassathal, 239.
Faults, 44, 174, 203, 395.
Favistella, 320.
Favre, Prof. E., 62, 63, 306.
Faxöe, 57.
Fedden, F., 136.
Feistmantel, Dr. O., 63, 136, 240, 336, 337, 375, 386, 404.
Felkner, J., 405.
Fellenberg, L. von, 211.
Fellithal, 86.
Felspars, 237, 238, 256.
Fessel, H., 63.
Fibrous Structure, 215.
Filby, Dr., 13.
Finistère, 217.
Finland, 74, 107.
Finmark, 90.
Fire-bricks, 206.
Fire-clays, 206, 207, 221.
Firedamp, 244.
Firestone, 383.
Firket, A., 63, 337, 405.
Firth, J. C., 150.
Fischer, H., 240.
——, P., 128, 306.
Fisher, Rev. O., 13, 172, 175, 195, 387.
Fishes, 276, 279, 284, 286, 287, 289, 291, 292, 300.
Fissures, 170, 174.
Fjälds, 107.
Fjords, 184.
Flahaut, E., 63, 387.
Fleetwood, 11.
Fleimserthal, 239.
Fliche, P., 63.
Flight, Dr. W., 112, 226, 251.
Flint, 241, 245, 312, 320, 328, 405, 407.
Flint Implements, 135, 372, 375, 378, 379.
Florida, 381, 392, 400.
Flower, Prof. W. H., 278, 403.
Fluorine, 261.
Folkestone, 35, 298.
Fontaine, W. M., 119.
Fontannes, F., 307, 386, 387.
Foot, F. J., 363.
Foraminifera, 299, 300, 303, 309, 313, 320, 328, 330, 413.
Forbes, W. A., 172.
Ford, S. W., 119.
Fordham, H. G., 13.
Forest Bed, 281.
Forests, Petrified, 407.
Formosa, 166.
Forrest, J., 150, 151.
Forsyth-Major, C. J., 279.
Fossils, 380.
Foster, Dr. C. le N., 13, 14, 40, 240.
——, E. le N., 119.
——, P. le N., jun., 64.
Fougeroux de Denainvilliers, A. de, 387.
Fouqué, F., 211, 240, 241.
Four-fathom Limestone, 28.
Fox, A. L., 137.
——, C., 145.
Foye, Prof. J. C., 241.
Fractures, 174.
France, 3, 4, 12, 18, 20, 40, 46, 48–55, 57, 58, 60–63, 65–68, 70, 74, 77–80, 82–89, 91–96, 101–105, 185, 188, 192, 198, 199, 201, 206–208, 210, 211, 217, 224, 226, 233, 235, 236, 241, 244, 246, 248, 249, 251, 255, 263, 267, 269, 272, 273, 277–280, 285, 287, 290, 291, 293, 295, 298, 300, 301, 303, 306–308, 310, 325–327, 335, 339, 358, 362, 373, 375, 376, 378, 379, 383, 384, 386–389, 391–396, 400, 401, 403, 405, 407, 408, 411, 413–416.
Franco-Belgian Frontier, 394.
François, J., 387.
Frankfort-on-the-Maine, 267.
Frankland, Dr. E., 200, 405.
Frazer, Prof. P., 120, 200, 211.
——, Prof. P., jun., 241.
Freeman, 41, 133.
Frenzel, A., 241.
Fresenius, R., 267.
Freshwater Beds, 72, 87.
—— Shells, 321, 324.
Frič, Dr. A., 307.
Fricke, Dr. K., 279.
Frickhinger, H., 211.
Friedel, C., 241.
Friederici, Dr., 387.
Frink, W. R., 207.
Friren, A., 307.
Fritsch, Prof. K. von, 373.
Fritz, Prof. H., 195.
Frome, 10.
Fryar, M., 137.
Fuchs, Dr. C. W. C., 64, 241, 242, 388.
——, K., 173.
——, T., 64, 65, 97, 98, 173.
Fulton, J., 388.
Fuly, 387.
Fumel, 207.
Fumeroles, 240.
Fusch, 65.

Gabb, W. M., 115, 120, 307.
Gadolinite, 250.
Gage, J. R., 242.
Galantin River, 364.
Galapagos Isles, 281.
Galena, 236, 262.
Galicia, 66, 87, 88, 96, 204.
Galisteo, 117.
Ganeval, A., 416.
Gap, 80.
Gardner, J. S., 307.
Garnets, 240, 253, 260.
Garnet Rock, 37.
Garnier, J., 65, 166, 242.
Garrigou, Dr., 65.
Garronne Mine, 411.
Garston, 35.
Gascony, 199.
Gasparin, P. de, 405.
Gastaldi, Prof. B., 66, 388, 401.
Gastaldite, 260.

Gasteropoda, 315, 318, 321.
Gateshead, 198.
Gatschet, A. S., 121.
Gaudard, J., 182.
Gaudry, A., 128, 279.
Gault, 25, 35, 49, 82, 102, 298.
Gauthier, V., 301.
Gautier, M., 242.
Gecko, 294.
Geikie, Prof. A., 366, 367, 375, 405.
——, Dr. J., 364, 367, 375.
Geinitz, E., 66, 308, 337.
——, Prof. H. B., 337.
Gellerstedt, G., 369.
Gems, 147.
Geneva, 47.
Genth, Dr. F. A., 242, 405.
Geography, 52, 54, 373, 381, 408.
Geological Boundary-lines, 381.
—— Essays, 209.
—— Surveys, 54, 370, 376, 381.
Georgia, 122, 124.
Gerber, H., 121.
Gerfalco, 80.
Gerini, C., 267.
German Empire, 44, 47, 48, 51-53, 60, 61, 63, 66, 68, 71, 73, 75–78, 80, 83–85, 89, 92, 94–97, 100, 101, 103, 108, 171, 177, 202, 208, 211–217, 219, 221, 223, 224, 232, 233, 241, 243–245, 247-249, 251, 252, 254, 256, 257, 260, 261, 263–265, 267, 279, 281, 286, 287, 290, 296, 301, 308, 313, 337, 339, 340, 355, 356, 377, 379, 383, 385, 388-392, 406, 411, 412, 415.
Gervais, Prof. P., 272, 280, 281, 375.
Geyler, H. T., 337.
Geyser region, 114.
Giant's Cauldrons, 48, 55, 187.
Gibb, T., 242.
Gien, 401.
Giesecke, Sir C. L., 111.
Giesler, E., 66.
Gilbert, G. R., 182, 398.
——, J., 14.
Gilkinet, H., 337.
Gillet, L., 63.
Gillieron, 99.
Gilpin, E., 388.
Gilsland, 24.
Gintl, Dr. H., 66.
Giordano, Prof., 373.
Gippsland, 412.
Girard, J., 66.
Glacial, 1, 2, 4–6, 8–12, 14, 17, 18, 21–25, 27–29, 32, 33, 35, 37, 39, 42–44, 51, 54, 55, 57, 62–64, 68, 78, 81, 83, 86, 89, 91, 96, 103, 104, 107, 110, 115, 122, 124, 131, 133, 136, 137, 144, 153, 154, 158, 162, 180–188, 287, 290, 291, 296, 329, 359, 363–370, 375, 388, 397, 402, 410, 412.
—— Rivers, 406.
Glauconitic Clay, 95.
—— Sand, 84.
Glen, D. C., 14.
Glenravel, 2.
Glen Rock, 40.
Gley, 388.
Gneiss, 123, 214, 218.
Godwin-Austen, Major H. H., 137.
Goesle, 308.
Gold, 48, 53, 116, 119–121, 125, 137, 144, 147, 152, 154–162, 164, 167, 168, 198, 202, 230, 239, 253, 261, 398, 399, 408.
Gold Bluff, 116.
Goldenberg, Dr. F., 281, 308.
Gonderbach Mine, 94.
Goodchild, J. G., 14, 182, 183, 242.
Goodhall, J., 151.
Gorceix, H., 121, 267.
Gore, J. E., 405.
Gorran Haven, 32, 327.
Gosau Beds, 104, 320.
Gosch, F. A., 234.
Gosse, W. C., 152.
Gosselet, Prof. J., 67, 68, 388.
Göthite, 251.
Gothland, 87, 335.
Gottsche, 388.
Gould, C., 40, 242.
Gourdan, 91.
Gourdon, Dr., 389.
Gower, 156.
Grad, C., 68.
Gräffe, Dr. E., 166.
Grainger, Rev. Dr. J., 15, 308.
Grampians, 405.
Gran-Canaria Island, 144.
Grand, A., 68.
Granite, 8, 23, 42, 122, 195, 206, 208, 209, 213, 220, 224, 229, 243.
Granulite, 208, 210.
Graphite, 198, 212, 233, 246.
Graptolites, 311, 319, 397.
Gratz, 74, 90.
Gravels, 30, 32, 183.
Gray, 89.
Graye, 285.
Great Britain, 200.
—— Gransden, 292.
—— Lakes, 130.
—— Limestone, 28.
—— Tuna, 250.
Greece, 65, 87, 94, 96, 199, 209, 211, 267, 324.
Greely, 316.
Gregory, A. C., 152, 389.
Green, Prof. A. H., 15, 359, 360, 370, 371.
——, W. L., 195.
Greenland, 109, 110, 234, 338, 398, 414.
Greensand, 13, 25, 35, 192, 275.
Greenwell, G. C., 15.
Greenwood, Col. G., 15, 173, 183.
——, W. H., 243.
Greifendorf, 216.
Greifenstein, 385.
Grewingk, Prof. C., 389.
Greywethers, 24, 37.
Grieve, D., 15.
——, J., 338.
Griffith, C., 16.
Grimm, Dr. J., 412.
Grindbrunnen, 267.
Grinnell, G. B., 125.
Grisons, 398.
Groot, C. de, 166.
Grossart, G. W., 338.

Grote, A. R., 308, 375.
Groth, P., 243.
Groves, T. B., 16.
Guadalajara, 86.
Guadalcazarite, 229.
Guanapi Guano, 261.
Guatemala, 248.
Guelph Formation, 126, 318.
Guiana, 115, 411.
Guillier, A., 68, 405.
Gunnælius, O., 68, 369, 389.
Gümbel, C. W., 68, 211, 212, 226, 308.
Gum-Copal, 294.
Gunn, J., 16, 281.
——, W., 22.
Günther, Dr. A., 281.
Guppy, R. J. L., 309.
Gurlt, Dr., 243.
Gurney, Rev. H. P., 243.
Gutzwiller, 369.
Guyard, A., 405.
Guyerdet, A., 389.
Gwalior Series, 139.
Gypsum, 44, 77, 80, 90, 95, 105, 125, 126, 142, 232, 248, 295.
Gyroporella, 75.

Haast, Dr. J., 152, 162.
Haberlandt, G., 281.
Hadrosaurus, 282.
Haeckel, Prof. E., 375.
Hagen, H., 406.
Hahn, Dr. P. D., 243.
——, O. H., 389.
Hainault, 56, 282, 402.
Halamanning, 23.
Halberstadt, 406.
Hall, Prof. J., 121, 330, 373.
——, T. M., 16.
Halland, 393.
Halle-on-the-Saale, 77.
Halliday, J. G., 173.
Hallstadt, 84,
Haltwhistle, 8.
Hambledon, Great, 26.
Hamilton (Canada), 396.
—— (New Zealand), 148.
Hampstead, 13.
Hanan, K., 75.
Hänigsen, 243.
Hanley, 11.
Hanover, 100, 243, 279, 412.
Hantken, Max von, 69, 309, 310.
Hardman, E. T., 17, 183, 213, 363.
Harkness, Dr. H. W., 121.
Harmignies, 56.
Harpe, Dr. P. De la, 338, 406.
Harrington, B. J., 121.
Harrison, M., 183.
Harting, P., 69, 389.
Hartley, Sir C. A., 183.
Hartt, Prof. C. F., 310, 312, 321.
Hartwig, Dr. G., 375.
Hartz, 71, 80, 391, 406.
Haslingden, 22.
Hastings, 29, 202, 203.
Hauchecorne, H., 69.
Hauer, B. C. von, 212.
——, C. R. von, 212.
——, F. R. von, 70, 358.
Haughton, Rev. Prof. S., 112, 213.
Haute-Marne, 102, 235, 236, 326.
—— Saône, 89.
—— Tarentaise, 54.
Hauyne, 247.
Haviland, A., 18.
Havre, 92, 384, 392.
Havrez, Prof. P., 212.
Hawaiian Archipelago, 165.
Hawes, G. W., 212, 243.
Hawick District, 404.
Hawkesley, T., 18.
Hawkins, B. W., 282.
Hawkshaw, J. C., 18.
Hayden, Dr. F. V., 122, 364.
Haye Park, 396.
Hayes, Dr. A. A., 212, 243, 267.
Hayter, H. H., 153.
Haytor, 13, 240.
Hazel-nuts, 8.
Headon, 388.
Health and Geology, 18.
Hébert, Prof. E., 70, 122, 310, 406.
Hector, Dr. J., 153.
Heer, Prof. O., 112, 338, 406.
Helland, A., 110, 183, 243, 406.
Helmersen, G. v., 200, 390.
Helmhacker, Dr. R., 71, 406, 413.
Hematite, 128.
Heming, W. T., 191.
Hemipatagus, 305.
Hennequin, Capt. E., 71, 362.
Hennessy, H., 406.
Henry, Prof. J., 171.
Hérault, 55, 95.
Herbst, Dr. G., 173.
Hercynian Gneiss, 107.
Heriot, Capt. M., 268.
Hermann, Hr., 101.
——, R., 390.
Hermannolite, 390.
Herold, H., 244.
Herouard, 244.
Herschel, Prof. A. S., 195.
Hertfell Spa, 268.
Hertzer, H. W., 406.
Herve, 53.
Hervian, 56, 95.
Hesse, E. A. von, 18.
Hessenberg, F. von, 244.
Heyrien, 387.
Hicks, H., 18-20.
Hiendelaencina, 86.
Higgs, S., jun., 153, 244.
Highlands, 1.
High Tatra, 105.
Hilgendorf, F., 390.
Hilger, A., 212.
Hill, Rev. J. S., 71.
Hillmorton, 44.
Hillyer, E., 122.
Hingir, 134.
Hintze, Dr., 244.
Hippopotamus, 145.
Hippothoa, 319.
Hirschwald, Dr. J., 244.
Hitchcock, Prof. C. H., 122.
Hobson's Bay, 306.
Hochstetter, Dr. F. von, 158, 282, 414.
Hocking, 123.
Hodges, Prof. J. F., 137.
Hodgson, T., 31.
Hoernes, Dr. H., 73.
——, Dr. R., 72, 210, 282, 311.
Hofmann, Dr. K., 212.
Hog, 285.
Hogneau, 77.
Hohenembs, 104.
Hokkaido, 168.
Holland, 69, 389, 393.

Hollande, M., 58.
Hollenthal, 75.
Holmes, T. V., 359, 370, 371.
Holmes Chapel, 26.
Holt, J., 20.
Home, D. M., 21.
Homer, C. J., 21.
Homomya Marls, 397.
Hoosac Mountain, 123, 213.
Hopewell, E. W., 21.
Hopkinson, J., 311.
Hoppe-Seyler, F., 213.
Horbausen, 258.
Hornblende, 245.
Horne, J., 21, 366.
Hornstein, F. F., 244.
Horold, G., 415.
Horses, 289, 290, 408.
Houzeau de Lehaie, A., 73, 282.
Howard, J. E., 375.
Howell, E. G., 398.
——, H. H., 359, 362.
Howitt, A. W., 160.
Howley, J. P., 126, 364.
Howorth, H., 112.
Howse, R., 10.
Hoyle, 320.
Hudleston, W. H., 19, 21, 22.
Hudson River Group, 330.
Huesca, 81.
Hughes, J., 245.
Hull, Prof. E., 12, 22, 173, 184, 185, 213, 245, 364, 366, 367, 375, 376.
Hull, 18.
Human Skull, 107.
Hummel, D., 73.
Hungary, 70, 79, 232, 282, 358, 389.
Hunt, R., 184, 191, 200, 262.
——, Dr. T. S., 122, 123, 127, 184, 209, 213, 268, 373, 376, 406.
Hunter, Dr., 311.
Huntingdonshire, 25.
Huron River, 124.
Hüttenberg, 264.
Hutton, 156.
——, Capt. F. W., 154, 311.
Huxley, Prof. T. H., 191, 192, 282.
Hyalite, 232.
Hyatt, Prof. A., 312, 407.
Hydrogeology, 93, 200.
Hydrology, 58, 144, 411, 412.

Ibex, 282.
Ice-action, 37, 185.
Ice Age, 184.
—— Cap, 174.
Icefjord, 110.
Iceland, 54, 75, 106, 107, 170, 178, 187, 219, 237, 384, 391.
Iceland Spar, 251.
Ichthyosaurus, 286, 295.
Igneous Rocks, 1, 2, 7, 8, 10, 12, 14, 15, 21–25, 28, 31, 34, 41–43, 46, 47, 53, 55, 59, 63, 64, 75, 76, 81, 86, 89–92, 98, 100, 101, 107, 110, 111, 119-121, 127, 134, 135, 140, 141, 144–146, 150–152, 154, 156, 159, 163, 165–170, 172, 173, 176, 178, 179, 206–224, 229, 248, 261, 292, 358, 359, 362–369, 389, 394, 397, 402, 407, 416.
Igritz, 282.
Iguanodon, 292.
Ilfeld, 217, 221.
Ilford, 403.
Ille-et-Vilaine, 57, 293.
Illinois, 133, 276, 328, 390.
Illogan, 201.
Illyria, 65.
Ilmenau, 217.
Ilwolf, 74.
Imeretia, 396.
Implements, Flint, 135, 372, 375, 378, 379.
Inberg, I. J., 74.
Inferior Oolite, 77.
Ingenite Rocks, 214, 215.
Ingersoll, E., 123.
India, 54, 134–139, 140-143, 199, 207, 240, 257, 262, 327, 336, 337, 375, 386.
Indiana, 399.
Indian Ocean, 165.
Indus, 135.
Inoceramus, 303.
Inowraclaw, 97.
Insects, 298, 299, 308, 322, 323, 375.
Interglacial Man, 96, 291.
Internal Fire, 171, 179.
Inundations, 184.
Inundation of the Sahara, 195.
Iowa, 226, 227.
Ireland, 2, 6, 12, 15, 17, 22, 27, 28, 31, 40, 41, 45, 183, 192, 200, 209, 213–215, 245, 267, 269, 296, 308, 312, 320, 323, 328, 329, 363, 376, 383, 397, 410.
Iron Mountains, 114.
Iron Ore, 7, 9, 10, 13, 21, 25, 36, 40, 48, 65, 66, 68, 82, 83, 94, 102, 104, 105, 111, 112, 114, 115, 119–121, 125, 126, 128-130, 134, 138, 140, 141, 146, 155, 156, 159, 167, 168, 198, 200–203, 212, 226, 229, 230, 236, 240, 242, 249, 252, 253, 257, 259, 261, 359, 369, 378, 389, 398, 400, 401, 405, 413, 414.
—— Sand, 233, 237.
Irvine, 38.
Irving, Rev. A., 22.
——, R., 123.
Ischl, 197.
Isère, 251.
Islavine, W., 390.
Isle of Man, 407.
Isomorphism, 233.
Issel, Prof. A., 388, 390, 407.
Italy, 48, 51, 52, 54, 55, 58, 59, 64, 66, 72, 74, 75, 77, 80, 81, 83, 84, 87, 92, 97–101, 106, 171-173, 177, 179, 184, 185, 191, 201, 206, 207, 210, 213, 219, 223, 228, 229, 231, 240, 241, 244, 246, 248, 252, 254, 257, 258, 267, 272, 274, 279, 281, 284, 291, 293, 296–298, 315, 316, 323, 335, 382, 384, 388, 389, 398, 400-403, 408, 413.
Itier, J., 407.
Ixelles, 96.

Jaccard, A., 74.
Jack, R. L., 23, 359, 366-368.
Jackson, W. H., 124.

Jacob, 201.
Jade, 230, 249.
Jadeite, 240.
Jamaica, 289, 307.
James, R, 23.
——, U. P., 312.
James River, 401.
Janettaz, E., 128, 245.
Janovsky, J. V., 245.
Japan, 166, 168, 169, 398, 399.
Jarville, 63.
Jasper, 245.
Jaubert, 74.
Java, 265, 385, 386, 415.
Jeanbernat, Dr., 102.
Jeffreys, Dr. J. G., 24, 35, 394.
Jemtland, 313.
Jenkins, H. M., 201.
Jenkinson, H. I., 24, 407.
Jenisei, 141.
Jentzsch, Dr. A., 173, 376.
Jernegan, J. L., 390.
Jerusalem, 142.
Jervis, Chev. W. P., 74.
Jespersen, M., 376.
Joachimsthal, 97.
John, K., 245.
Johnson, Dr. C., 338.
——, J., 390.
——, M. H., 312, 407.
——, S. W., 201.
Johnston, 156.
——, R. M., 390.
Johnstone, W., 268.
Jökulls, 107.
Jolly, W., 24.
Jones, J. B., 201.
——, Prof. T. R., 24, 111, 245, 312, 313, 376, 394.
——, Capt. W. A., 124.
Jordan, H. K., 11.
Jourdan, Prof., 145.
Jourdy, M., 60.
Judd, Prof. J. W., 25, 111, 173.
Juillac, 358.
Jukes, Prof. J. B., 12.
Jukes-Browne, A. J., 25.
Jummoo, 135.
Jura, 55, 397, 411.
Jurassic, 55, 90, 97, 103–106, 109, 110, 125, 127, 128, 144, 298, 312, 314, 315, 321, 327, 337, 338, 358, 364, 367, 369, 386, 389, 392, 397, 401, 411.
Jurassic, Upper, 5, 6, 13, 32, 40, 44, 47, 60, 63, 70, 80, 97, 100, 102, 279, 288, 291, 292, 306, 313, 316, 362, 363, 407.
——, Middle, 6, 22, 25, 45, 47, 49, 55, 60, 80, 93, 100, 102, 106, 292, 300, 303, 306, 308, 313, 362, 363.
——, Lower, 2, 7, 9, 10, 21, 22, 25, 29, 31, 44, 46, 63, 72, 75, 77, 78, 80, 104, 105, 125, 148, 154, 222, 288, 296, 300, 313, 361–363, 413.

Kaemmerer, H., 245.
Kaims, 184.
Kaiserstuhl, 391.
Kalkowsky, Dr. E., 213, 214, 245.
Kalnik Mts., 311.
Kaloxylon, 340.
Kampti series, 137.
Kamüschin, 103.
Kanan, 168.
Kanawha Canal, 401.
Kangaroos, 284, 287.
Kaolins, 244.
Kaolinic Sand, 83.
Kapff, Dr., 283.
Kårarfvet, 230.
Kara-sou valley, 141.
Karoo series, 134.
Karpinski, A., 407.
Karrer, F., 75.
Karst, 87.
Karyinite, 250.
Kashmir, 135.
Kauai, 207.
Kaufmann, F. J., 369, 391.
Kaulakov, 391.
Kayser, E., 75, 313.
——, E. A., 155.
Kchiuta, 48.
Keeping, W., 26.
Kelso, 9.
Kempthorne, P. H., 26.
Kengott, Dr. A., 246.
Kensington, 22.
Kent, 41.
Kent's Cavern, 26, 32, 378, 383, 394.
Kentucky, 379.
Keppen, A., 391.
Kerguelen Island, 166.
Kern, S., 214, 246.
Kerosene Shale Mines, 392.
Kerr, J., 26.
——, Prof. W. C., 391.
Kersantite, 224.
Kersanton, 224.
Ketley, C., 26.
Keuper, 335.
Khareean Hills, 142.
Khásia Hills, 139.
Kief, 364.
Kiel, 105, 256.
Kienthal, 103.
Kiesenwetter, von, 75.
Kilchattan, 9, 14.
Kilkenny, 17.
Kimmeridge Clay, 5, 292.
Kinahan, G. H., 27, 28, 31, 145, 174, 184, 195, 214, 195, 214, 215, 410.
Kineton, 6.
King, C., 369.
——, C. C., 24.
——, Prof. W., 174.
——, W., 137.
Kingston-upon-Hull, 18.
Kinkelin, F., 184.
Kirkby, J. W., 312.
Kirkintilloch, 359.
Kitton, F., 246.
Kjellmann, F. R., 110.
Kjerulf, Prof. T., 75.
Kladno Ironworks, 242.
Klein, Prof. C., 235, 246, 247.
——, Dr. H. J., 376.
Kleinhennersdorf, 101.
Klette, H., 247.
Klippart, J. H., 284.
Klipstein, Dr. A. von, 76.
Kneeland, S., 407.
Knight, C., 155.
Knop, Dr. A., 76, 247.
Knorria, 337.
Koch, Dr. G. A., 76, 184, 215, 271, 277.
Koenig, Dr. G. A., 115.
Kohát, 142.
Kokscharow, N. von, 247, 248, 391, 407, 408.
Kolb, J., 201.
Könen, von, 391.
Königsberg, 171, 232, 390.

Koninck, Prof. L. G. de, 58, 76, 269.
Koppite, 247.
Körner, F., 376.
Kounova, 307.
Krasnoiarsk, 401.
Krausé, F. M., 161.
Krefft, G., 284.
Krejci, J., 76.
Krenner, Dr. J. A., 248.
Krol Group, 139.
Kuhn Island, 414.
Kuku-noor, 269.
Kurdistan, 140.
Kutch, 327.

La Bouexière, 327.
Labradorite, 262.
La Bruyère, de, 408.
Labyrinthodon, 286, 296.
Lacaille, A., 408.
Ladrière, 77.
Laekenian, 96, 386.
Laguerenne, T., 248.
La Hève, 392.
Laibach, 374.
Lakes, 130, 184, 188, 388.
Lake-basins, 42, 126.
—— District, 10, 42.
—— Dwellings, 374.
—— Terraces, 9.
Laloy, R., 268.
Lambay, 209.
Lambert, E., 376.
Lamellibranchiata, 306, 321.
Lamna, 291.
Lanarkshire, 330, 364.
Lancashire, 26, 364.
Lancé Meteorite, 226.
Land, 180.
——, Undulations of, 66, 170.
Land-shells, 321, 323.
Landenian, 192, 385.
Landerer, J. J., 195, 376.
Landes, 79.
Land's End, 8, 208.
Landslips, 48, 49, 108.
Lang, H. O., 215, 216.
——, Rev. Dr. J. D., 155.
Långbanshyttan, 250.
Langenschwalbach, 224.
Langkofel, 73.
Langton, 292.
Langtry, G., 28.
Languard Common, 8.
Lankester, Prof. E. R., 375.
La Plata, 131, 241, 246, 289.
Lapparent, A. de, 46, 77.
Lapworth, C., 311, 397.
Largeau, V., 145.
Largentière, 413.
Larousse, E., 46.
Lartet, E., 376.
Lasaulx, Prof. A. von, 216, 248.
Laspeyres, Prof. Dr. H., 77, 248, 249.
Launceston, 390.
Laurentian, 19, 30, 90, 107, 110, 118, 119, 130, 131, 154, 262, 300, 302, 312, 364, 409.
Laurium, 95, 199.
Lausanne, 338.
Lauterbach, 391.
Lavant, 108.
Lavas, 150, 211, 213, 240, 245.
Lavelley, A., 46.
Lavras, 121.
Lawley, R., 281, 284.
Lawson, J. S., 124.
——, W., 376.
Lead-ore, 26, 36, 47, 82, 94, 119–121, 126, 142, 155, 159, 197, 198, 202, 230, 231, 242, 249–251, 258, 261, 359, 362, 363, 370, 395, 396.
Leaf-beds, 338.
Lebanon, 137.
Lebedav, 391.
Lebesconte, P., 327.
Lebour, G. A., 28, 58, 185, 192, 195.
Lecce, 87.
Lecocq, G., 385, 394.
Le Conte, Prof. J., 117, 124, 192.
Lecoq de Boisbaudran, 249.
Lecovec, 249.
Ledoux, C., 77.
Leeds, Prof. A. R., 124, 249.
Lefevre, T., 77, 391, 403.
Leghorn, 54, 402.
Lehmann, R., 391.
Leicestershire, 6, 21, 25.
Leichhardt, Dr., 150.
Leidy, Prof., 284, 285.
Leigh, Dr. J., 195.
Leinster, 213.
Leipzig, 75.
Leitha Limestone, 73, 402.
Lejeune, E., 392.
Leluy, 392.
Lemberg, J., 216.
Lémeno Hill, 70.
Lemming, 287.
Lemurs, 275.
Lenz, Dr. O., 145, 414.
Léon de Cessac, J., 128.
Leonard, N. R., 227.
Lepidotus, 414.
Le Play, F., 416.
Lepsius, R., 78.
Lérida, 105.
Lesley, Prof. J. P., 124.
Lessorer, 401.
Lestodon, 289.
Letellier, 78.
Leucite, 241, 244, 265.
Leucopyrite, 253.
Levette, Dr. G. M., 399.
Lévy, M. A. M., 216.
Leymerie, A., 78.
Lherzolite, 403.
Lias, 2, 6, 7, 9, 10, 21–23, 25, 28, 29, 31, 38, 39, 44, 46, 55, 56, 58, 66, 69, 71, 72, 80, 81, 83, 84, 91, 99, 106, 127, 142, 148, 209, 222, 286, 291, 295, 300, 301, 307, 316, 323, 329, 337, 338, 358, 359, 361, 362, 369, 391, 394, 397.
Liban, 390.
Liburnian, 98.
Libyan Desert, 269.
Licata, 291.
Lieban, 101.
Liége, 56, 58, 95.
Liénard, F., 408.
Liévin, 50.
Lievrite, 258.
Life, Development of, 302.
Lignites, 58, 63, 129, 131, 132, 220, 403, 414.
Liguria, 298, 401.
Lill, M. von, 249.
Lille, 57.
Limburg, 95.
Lime, Phosphate of, 255.
Limestone, 190, 192, 193, 195, 206, 210, 214, 215, 217, 218, 256, 373, 399.

Limonite, 251.
Limur, Comte de, 249.
Lincolnshire, 2, 6, 9, 10, 25.
Lindenau, 75.
Lindsay, Dr. W. L., 408.
Lindström, A., 78, 110, 216.
——, G., 249, 250, 410.
Linnarsson, Dr. G., 78, 79, 313, 335, 369.
Linth, Escher von der, 369.
Lionnet, G., 392.
Lippmann, 79.
Lisdoonvarna, 269.
Lists of Fossils, 4–7, 9, 10, 13, 15–17, 22, 24–26, 29, 32, 38, 40, 44, 45, 62, 63, 65, 69, 70, 73, 77, 79, 84, 85, 87, 95–97, 105, 112, 122, 131, 273-275, 279, 304, 307, 310, 313, 316, 317, 320, 404, 410.
Lithium, 212.
Lithographic Stone, 61.
Lithological Variations, 411.
Lithothamnia, 340.
Litoceras, 316.
Little, G., 124.
Little Limestone, 28.
Liverpool, 198.
Liversidge, Prof. A., 155, 156, 157, 250.
Livingstonite, 231.
Livonia, 389.
Lizard (Cornwall), 253.
Lizards, 294.
Llandeilo Rocks, 18, 311.
Llangorse, 278.
Llano County, 364.
Llynfi, 11.
Lobley, J. L., 13, 29.
Locard, A., 376.
Lochfyne, 233.
Lockwood, D. W., 132.
Lodes, 14, 79, 158.
Lodève, 339.
Lodge Farm, 44.
Lodin, 79.
Loess, 107, 391.
Loew, Dr. O., 124, 132, 398.
Loire-Inférieure, 79.
Loiret, 207.
Lombardy, 83, 323.
Lomond, Loch, 23.
Lamont Range, 415.
London, 43.
—— Basin, 30.
Loretz, H., 313.
Lorieux, E., 79.
Loriol, P. de, 80, 310, 313, 314, 392.
Lorraine, 66, 95, 373.
Lortet, Dr., 285, 408.
Lory, C., 80, 99.
Lossen, K. A., 80.
Lot, 255.
Lotti, B., 80.
Louisiana, 402.
Lowlands, 1.
Low Main, 271.
Lozère, 62.
Lucas, Hon. J., 156.
——, J., 360, 361, 370.
Lucca, 100.
Lucerne, 55, 391.
Ludlow, Capt. W., 125.
Ludwig, E., 250.
——, G., 392.
——, Dr. R., 80, 392.
Ludwigite, 232.
Lugano, 222.
Lundstrom, C. H., 250.
Lundy Island, 43.
Lurgan, 45.
Lusatia, 89.
Luxemburg, 58.
Luzon, 247.
Lybia, 407.
Lycett, J., 314.
Lycopodiaceæ, 336.
Lyell, Sir C., 377, 380.
Lyman, B. S., 166, 398, 399.
Lyme Regis, 329.
Lyons, 376.
Lys, 63.

M'Coy, Prof. F., 314.
MacCulloch, J. R., 111.
Macfarlane, Dr. J., 125.
Machairodus, 33, 280.
Machattie, Dr. A. T., 125, 250.
M'Kay, A., 158.
Mackay, T., 158.
Mackensie, River, 122.
Mackenzie, J., 157, 365, 392.
M'Kerrow, J., 154.
Mackintosh, D., 29, 175, 185.
M'Nab, Prof. W. R., 338.
Macpherson, J., 81, 216.
——, Dr. J., 382.
Macropodidæ, 289
Macropus, 289.
Madagascar, 146, 296.
Maddock, Rev. H. E., 29.
Maderspach, L., 81.
Madison River, 364, 367.
Madron, 244.
Maestre, A., 377.
Maestricht, 294.
Magnesite, 260.
Magnetic Iron-ores, 14, 130, 233, 249.
Magnetism, 413, 414.
Maidencombe, 393.
Main Region, 379.
Maine, 170, 178.
Maine-et-Loire, 267, 415.
Maisières, 53.
Makowski, A., 81, 315.
Malaise, Prof. C., 81, 315, 408.
Malet, H. P., 175, 217.
Malherbe, R., 201, 268.
Mallada, L., 81, 315.
Mallet, F. R., 138, 139.
——, Prof. J. W., 250, 251.
——, R., 172, 175, 176, 178.
Malowka, 76.
Mammalia, 277, 279, 281, 285, 289–291, 389, 405, 408, 409.
Mammoth, 293, 389.
Man, Antiquity of, 17, 96, 117, 135, 151, 277, 291, 372, 373, 375–380, 389, 408.
——, Isle of, 4, 5, 21, 407.
Manatee, 295.
Manganese, 63, 119, 142, 239.
Mangin, A., 377.
Manitoba, 303, 412.
Manning, J., 158.
Mans, 335.
Mansell, F. W., 125.
Mantovani, P., 81.
Manzoni, A., 81, 315.
Maps, Mining, 201.
Marble, 48, 49.
Marc, L'Abbé, 285.
Marchand, 408.
Marche, 404.

Marchese, E., 81, 251.
Maroou, J., 125, 315, 369, 377.
Marion, A. F., 62, 339.
Mark, Lough, 215.
Markham, C. R., 145.
Marl, 405.
Marly Concession, 65.
Marmora, 72.
Marne, 210.
Marocche, 87.
Maroggio Tunnel, 211.
Marquette, 67.
Marseilles, 407.
Marsh, Prof. O. C., 126, 285, 286, 408, 409.
Martin, C., 185.
——, J., 82.
Martins, Prof. C., 82.
Martyn, Dr. S., 286.
Marvine, A. R., 398.
Mascarene Islands, 165.
Masciara, 87.
Maskelyne, Prof. N. S., 111, 227, 251.
Massachusetts, 115, 119, 127, 395.
Massart, A., 82.
Mastodon, 117, 271, 277, 294.
Matthew, G. F., 392.
Maurer, F., 83.
Mauritius, 165, 223, 281 317, 386.
Maw, W. D., 205.
——, W. H., 205.
Mayer, C., 315.
——, K., 409.
May Hill, 397.
Maynard, J., 201.
Mayo, 40.
Mea, 358.
Meade, R., 201.
Mediterranean, 61, 304.
Medlicott, H. B., 139.
Meek, Prof. F. B., 112, 316, 328, 331.
Meerschaum, 312.
Meionite, 252.
Meknes, 144.
Melanite Garnets, 240.
Melanosiderite, 234.
Melaphyres, 145, 210, 223.
Melbourne, 163.
Melliss, J. C., 167.
Mello, Rev. J. M., 30, 217, 273.
Mende, 62.
Mendips, 1.
Mène, C., 207.
Meneghini, Prof. G., 83, 316.
——, J., 323.
Menheniot, 14.
Menin, 404.
Mentone, 290.
Mephitinæ, 277.
Meran, 64.
Mercedes, 372.
Mercey, N. de, 83, 393.
Mercier, L., 414.
Mercury, 162, 231, 239, 256, 373.
Merian, Prof. P., 286, 369.
Mer Rouge, 223.
Mesozoic, 114, 211, 288, 414.
Mesvin, 56.
Metal Dams, 7.
Metalliferous Deposits, 34, 36, 37, 82, 100, 199, 203, 243, 373, 377, 405.
Metamorphic Rocks, 42, 208, 209, 416.
Meteorites, 196, 373, 410.
Meteorology, 167, 414.
Metzdorf, 213.
Meunier, S., 83, 84, 227, 377.
Meunier-Dollfus, C., 220.
Meurthe-et-Moselle, 79.
Meuse, River, 53.
Mexico, 114, 117, 219, 229, 231, 233, 237, 248, 250, 256, 257, 263, 297, 389, 401.
——, New, 113, 117, 124, 128, 132, 275, 276, 402.
Meximieux, 62, 339.
Meyssac, 358.
Miall, L. C., 286, 287.
Mica, 232, 244.
Mica-trap, 213.
Michigan, 132.
Microcline, 238.
Microgeology, 304.
Micro-photography, 120.
Microzoa, 328, 329.
Middlesex, 45.
Mietzsch, Dr. H., 377.
Milaschewitsch, C., 298.
Mille, 84.
Miller, 84.
——, S. A., 316.
Millstone Grit, 20.
Milne, J., 140.
Milne-Edwards, A., 287.
Milner, Rev. T., 409.
Mimoseæ, 334.
Minas Geraes, 121.
Minera, 383.
Mineral Hill, 234.
Mineral Oils, 202.
—— Statistics, 200.
—— Waters, 387, 399, 407, 412.
—— Wax, 204.
Mineralogy, 242, 243, 391, 407.
Minerals, 79, 97, 114, 119, 120, 137, 147, 148, 191, 202, 229, 241-244, 247, 248, 364, 373, 377, 388, 397, 405, 411, 416.
——, Lists of, 22, 24, 30, 36, 89, 111, 114–116, 119, 120, 154, 239.
Minettes, 210, 217.
Mining, 13, 14, 64, 114, 119, 123, 125, 147, 153, 155, 156, 159, 166, 198, 199, 201, 202, 204, 372, 373, 391, 393, 396, 400, 405, 407, 410, *411*, *413*, 415.
Minnesota, 123, 132.
Miocene, 15, 18, 31, 41, 51, 54, 60, 63–65, 69, 70, 72, 73, 77, 81, 84, 87, 88, 90, 108-112, 117, 120, 125, 126, 131, 134, 142, 144, 148, 154, 156, 159, 168, 198, 271, 277, 279–282, 285, 287, 294, 298, 299, 302, 304-307, 309, 311, 314, 316, 321, 325, 337-339, 358, 362, 364, 385, 389, 395 402, 406, 408.
Mischennov, 409.
Miserey, 57.
Mississippi, 113, 123.
Missouri, 114, 117, 221, 233, 242, 271, 277, 396.
Mivart, Prof. St. George, 287.
Moa, 153, 154, 271.
Moa-bone Point Cave, 152.
Moa-hunters, 158.
Moa Swamp, 148.
Moeller, V., 393.

Moesch, Dr. C., 316, 369.
Moesta, 84.
Moffat Spa, 268.
Moflong, 139.
Möhl, Prof. H., 217.
Mohr, Prof. F., 177, 227, 377.
Moigno, l'Abbé, 196.
Moira, 45.
Moissenet, Prof., 217, 251.
Mojanda, 219.
Mojsisovics, Dr. E. von, 84, 85.
Mokattam Cliffs, 288.
Mollasse, 51.
Mollersdorf, 73.
Mollusca, 31, 310, 320, 321, 323, 328, 401.
Molten balls, Solidification of, 220.
Molyneux, W., 30.
Mongel, L., 140.
Mons, 56, 73, 298.
Mons-en-Barœoul, 385.
Mont Alfeo, 267.
Montana, 132, 364.
Montauban, 93.
Mont Blanc, 396.
Mont des Chats, 394.
Mont-Dol, 85, 293.
Monte Mario, 51.
Monteiro, J. J., 146.
Montesanto, 81.
Montgomerie, Lieut.-Col. T. G., 140.
Montgomery, R. A., 30.
Mont Halluin, 394.
Monticellite, 254, 410.
Montiérender, 102.
Mont-Lozère, 61.
Montluel, 62.
Montolien, 102.
Mont Richer, de, 85.
Mont Voirons, 306.
Monzoni, 59, 92, 239, 245, 254, 410.
Moody, R. W., 158.
Moonta Mines, 147.
Moore, C., 316.
Moraines, 183.
Moraine-features, 58.
Moravia, 81, 383.
Morbihan, 48, 249.
Morden, 13.
Morelet, A., 317.
Moresby, Capt. J., 167.
Morocco, 144.
Morris, Prof. J., 30, 31, 336.
Morstadt, Dr. J., 85.
Mortillet, G. de, 85, 377.
Mortimer, R., 31.
Morton, J. C., 200, 405.
Mosasaurian Teeth, 282.
Moselle, 413.
Mountains, 373.
Mountain Chains, 92.
Mountainville, 83.
Mount Eden, 150.
Mount's Bay, 187.
Mourlon, M., 85, 393.
Moustier, 372.
Moustierian, 85.
Mow Cop, 36.
Mud, 223, 406.
Mud Volcanoes, 55.
Mudgee, 155.
Mull, 338.
Mullens, Rev. J., 146.
Müller, Baron von, 164.
——, Prof. A., 86, 251, 378.
— —, J., 374, 414.
Mulligan, J. V., 158.
Mundy, D. L., 158.
Munier-Chalmas, 310.
Munoz, M. B., 86.
Munroe, H. S., 168, 398, 399.
Murchison, Sir R. I., 112, 375.
—— River, 150.
Murchisonite Beds, 32.
Murex, 325.
Murray, 161.
——, A., 126, 364, 365, 409.
Musconetcong, 386.
Muscovite, 262.
Myelopteris, 339, 340.

Næverhougen, 389.
Nágá Hills, 137.
Nágpúr, 199.
Nahanik, 31, 410.
Náhun Beds, 138, 143.
Namcho, 140.
Namur, 61.
Nancy, 63.
Nantucket Island, 131.
Narbada, 139.
Narin, 191.
Narragansett Bay, 130.
Nash Co., 228.
Nasserheit, 253.
Natal, 146, 207.
Nathorst, A. G., 86, 217, 335, 338.
Natrolite, 229.
Nattheim Beds, 298.
Natural Coke, 264.
Navia, S., 252.
Neagh, Lough, 17.
Nebraska, 132, 177.
Nehring, A., 287.
Nelly's Cove, 320.
Neminar, E. F., 218, 252.
Neocomian, 2, 4, 6, 10, 18, 26, 29, 35, 36, 39, 40, 44, 46, 48, 49, 51, 61, 63, 72, 89, 104, 106, 134, 148, 193, 203, 263, 278, 282, 288, 292, 326, 339, 408.
Neogene, 72.
Nepal, 139.
Nepheline-basalt, 223.
Nephrite, 240.
Nerike, 79.
Neritopsis, 301.
Ness, W., 140.
Nesterowsky, 140.
Netherlands, 393.
Neuberg, 230.
Neuchâtelese Jura, 326, 397.
Neumayr, Dr. M., 86, 87, 177, 317.
Nevada, 132, 230, 384, 389.
Newall, 31.
——, R. S., 393.
Newbattle, 15.
Newberry, C., 230.
——, Prof. J. S., 287, 330, 373.
Newbery, J. C., 162.
New Bilton, 295.
—— Brunswick, 392, 410.
Newbury, U.S., 115.
—— Port, 115, 261, 395.
New Caledonia, 148, 165, 166, 242, 245, 250.
Newcastle, 198, 393.
New England, 118.
Newfoundland, 126, 364, 365, 409.
New Guinea, 165, 167.
—— Jersey, 116, 130, 232, 385.
Newman, Mr., 147.
New Mexico, 113, 117, 124, 128, 132, 275, 276, 402.

New Red Sandstone, 192, 393.
Newsham, 271.
New South Wales, 147, 148, 150, 155–158, 165, 218, 358, 365, 392.
Newton, H., 378.
——, E. T., 218.
Newton Abbot, 381.
New York, 121, 235, 271.
—— Zealand, 147–155, 158, 159, 162, 164, 271, 272, 289, 296, 304, 311.
Neyt, P. J., 393.
Niagara, 180.
—— Formation, 331.
Nice, 94.
Nicholas, W., 158, 161.
Nicholson, Prof. H. A., 126, 318–320, 323, 331, 393.
Nickel, 165, 166, 201, 250.
Nicobar Isles, 304.
Nicolson, A., 31.
Niederstadt, Dr. B. C., 252.
Niedzwiedzki, J., 218.
Nievale, 100.
Niigata, 169.
Niles, W. H., 127.
Nitrates, 114.
Njös, 93.
Noad, Dr., 206.
Noak, F. W., 177.
Nodules, 193.
Noel, R. R., 374.
Nöggerathia, 337.
Nolan, J., 363.
Norberg, 103.
Nordenskiöld, A. E., 110, 112, 141, 185, 253, 410.
Nordenskiöldian Iron-masses, 111.
Nordström, T., 87, 369.
Nore, River, 31.
Noric beds, 84.
Normandy, 105, 400.
Northamptonshire, 21, 25.
Northumberland, 8, 28, 198, 271, 272, 365.
Norway, 20, 53, 75, 90, 93, 98, 183, 184, 200–202, 212, 218, 219, 224, 237, 243, 253, 255, 299, 386, 389, 406.
Norwich, 16, 281.
Nottingham, 22.
Nottinghamshire, 2, 6.
Noursoak, 109.
Nova Scotia, 202, 269, 412.
—— Zembla, 109, 324.
Nuculidæ, 298.
Nullipores, 403.
Nummulitic Beds, 80, 104, 106, 168, 288, 406.
Nussdorf, 282.
Nutfield, 29.
Nyřan, 307.
Nyst, M., 61.

Öberg, V., 369.
Oberland, 104.
Oceanic Jade, 249.
Odling, Dr., 18.
Odontopteris, 335.
Odontornithes, 286.
Œningen Stage, 402.
Oetzthal Mountains, 215.
Offenbánya, 92.
Ohio, 113, 123, 124, 130, 271, 274, 275, 287, 319, 330, 331, 334, 397.
Olbers, E. W., 393.
Olcott, E. E., 393.
Old Castille, 377.
Oldham, R. D., 32.
——, Dr. T., 141, 336.
Old Red Sandstone, 286.
Oligocene, 105, 326.
Oligoclase Nodules, 240.
Olivine, 245.
Olonetz, 80, 392.
Olry, 87.
Olszewski, S., 87.
Olympiad, 199.
Omboni, G., 87, 378.
O'Meara, Rev. E., 320.
Omosaurus, 288.
Ontario, 115, 262, 318.
Oolite Sands, 7.
Oolitic Rocks, 31, 44, 279, 394.
—— Iron-ores, 66.
Opal, 147.
Ophiolite, 390.
Opisthoptera, 297.
Oppenau, 61.
Oran, 144, 291.
Orange County, 271.
Orange-Nassau, 168.
Oregon, 120, 385.
Ore-Knob Mine, 123, 393.
Orenburg, 407.
Ormerod, G. W., 32, 393.
Ornithosaurian, 292.
Orography, 80, 103.
Oropos, 199.
Orthoclase, 391, 394.
Orthoidea, 307.
Ortler, 98.
Ortlieb, J., 393, 394.
Orton, Prof. J., 127, 312.
Orvinio, 228.
Oscillations, 170, 173, 174.
Osseous Breccia, 94.
Osterdal, 299.
Ostracoda, 312.
Ostrau, 101.
Otago, 152, 154, 162, 311
Otisville, 271.
Owen, Prof. R., 284, 288, 289.
Owle, 215.
Ox, 271.
Oxford, 22.
Oxfordian, 102, 292.
Oxland, Dr. R., 202.
Oxynoticeras, 312.
Ozokerite, 66, 204.

Pachnolite, 398.
Pacific Railroad, 407.
Padua, 101.
Paetel, F., 320.
Paget, F. A., 205.
Paisley, Rev. C. H., 410.
Paladini, L., 410.
Palæoniscus, 271.
Palæontology, 373, 405, 411.
Palæotherium, 280.
Palæozoic, 55, 79, 98, 211, 279, 303, 308, 312, 318, 319, 323, 369, 375, 401.
Palatinate, 340.
Palestine, 142.
Palipoon, 137.
Pallas, 401.
Palorchestes, 289.
Pålsjö, 338.
Paludina, 317.
—— Beds, 89, 325.
Palumbo, 87.
Pampas, 404.
Panama, 114.
Panisel Mt., 73.
Paniselian, 61, 104, 106, 394.
Pankhurst, E. A., 202.
Pannah, 141.

Panopæa, 61, 303.
Papier, A., 192.
Pará, 310, 321.
Parád, 261.
Paraguay, 113, 114.
Parandier, A. N., 415.
Parfitt, E., 32, 192.
Paris, 83, 96, 295, 387.
—— Basin, 49, 50, 272.
—— Lake, 95.
Park County, 390.
Parker, J., 22, 88.
——, Prof. W. K., 313.
Parsons, Dr. H. F., 394.
Parton, T., 177.
Pasceolus, 313.
Pas de Calais, 392, 393.
Passau, 47.
Passy, A. F., 52, 88.
Passyite, 408.
Pasture-land, 200.
Patagonia, 113, 114.
Patrin, 171.
Paul, C. M., 88, 89, 317.
Payer, J., 111, 112.
Peach, B. N., 359, 367, 368.
——, C. W., 32, 289, 320.
Peak Station, 150.
Peale, A. C., 364.
Pearce, R., 253.
Peat, 75, 102, 197, 201, 203.
Pebas Group, 300.
Pechin, E. C., 202.
Peck, Dr. R., 89.
Pecopteris, 335.
Peine, 51.
Pelew Islands, 169.
Pellat, E., 392.
Pelobatochelys, 292.
Pelsen, 307.
Pembrokeshire, 18.
Pengaron, 168.
Pengelly, W., 32, 33, 378, 394, 410.
Pennington, R., 33.
Pennsylvania, 120, 124, 125, 129, 202, 211, 234, 242, 264.
Pentagonal Network, 170.
Pentuan, 278.
Penzance, 43, 240, 244.
Peremba, 96.
Peridote, 236.
Périgord, 376.
Permian, 17, 22-24, 26, 27, 36, 41, 64, 66, 71, 72, 77, 79, 82, 86, 89, 93, 97, 99, 134, 136, 166, 168, 204, 279, 297, 308, 324, 337–339, 370, 371, 319, 394.
Pernambuco, 321.
Péroche, J., 89.
Peron, A., 146, 301.
Péronges, 62.
Perowskite, 407.
Perron, E., 89.
Persberg, 102.
Persia, 140, 142, 269.
Peru, 116, 241, 250, 255, 300.
Peruci, 63.
Peschel, O., 196.
Petermann, Dr. A., 89, 127.
Peters, Prof. K., 74, 90.
Petit-Bois, G., 141.
Petitot, P. E., 122, 128.
Petrino, F. O. von, 90.
Petroleum, 66, 114, 122, 124, 126, 140, 198, 199, 202, 204, 386, 392, 398.
Petrowitz, 81.
Pettersen, K., 90, 218.
Peyton, J. E. H., 48, 202.
Pfaff, 177.
Pharmacosiderite, 232.
Philadelphia, 164.
Philippine Isles, 247.
Philippsite, 235, 260.
Phillips, 156.
——, Prof. J., 394.
——, J. A., 34, 394.
Pholadomya, 316.
Phosgenite, 336.
Phosphatic Deposits, 11, 19, 26, 39, 53, 56, 82, 84, 89, 93, 108, 212, 230, 243, 245, 252, 255, 262, 263, 267, 279, 384, 392.
Phthisis, Distribution of, 18.
Phylloceras, 316.
Physical Geography, 92, 376, 409.
Physics, Cosmical, 195, 196.
Physopoda, 323.
Pichler, Prof. A., 91, 218, 253, 321.
Piedmont, 298, 384, 401, 403.
Piestingthal, 108.
Piéton, 53.
Piette, E., 91, 321.
Pillet, M., 70.
Pillnitz, 66.
Pilsen, 71, 76.
Pinart, A. L., 128, 141.
Pinchin, R., 146.
Pinet, A., 411.
Pingel, Dr., 112.
Pinus, 339.
Piquet, A., 218.
Pistacite, 240.
Pitchblende, 253.
Pitt, W. H., 308.
Planorbis, 390.
—— Beds, 96.
Plant, F., 218.
Plant Remains, 78, 134, 332, 334, 373, 406, 414.
Plastic Clay, 337.
Platinum, 142, 168, 230, 236.
Plattner, 253.
Platycrinus, 297.
Platygonus, 284.
Platz, Prof. D., 91.
Plauen'sche Grund, 217, 223.
Pleistocene, 273, 291, 322, 335, 403.
Pleurotomaria, 314.
Plicatocrinus, 316.
Pliocene, 10, 51, 54, 55, 58, 60, 61, 64, 65, 67, 72, 74, 78, 81, 87 89, 97, 98, 100, 103–105, 108, 116, 121. 126, 132, 134, 144, 148, 154, 156, 159, 271, 275, 277, 279–281, 284, 285, 292, 293, 298, 304, 305, 314, 315, 317, 321, 323, 325, 362, 363, 368, 402.
Plocq, 92.
Plumas Co., 121.
Plumbago, 198.
Plunkett, W., 269.
Plymouth Hoe, 45.
Po, 384, 388.
Podolia, 96.
Polar Regions, 110, 111, 185, 414.
—— Temperature, 379.
Polaris Bay, 109.
Polycystina, 304.
Polyzoa, 305, 306, 312, 318, 319, 329, 331.
Pomel, 395.
Pomerania, 97.
Pond-mud, 207.
Pontaven, 217.

Pont-Levoy, 325.
Pontypool, 383.
Ponza Islands, 59.
Ponzi, Prof. G., 81, 92.
Poole, H. S., 202.
Popovics, A. B., 92.
Porcellia, 330.
Pornac, 358.
Porphyrite, 221.
Porphyritic Rocks, 81.
Porphyry, 209, 210, 211, 220.
Portage Group, 331.
Porte, 219.
Porthalla, 320.
Portland, I. of, 34.
Portland Cement, 208.
Portlandian, 102.
Portland Stone, 246.
Portsmouth, 208.
Portugal, 337.
Pošepny, F., 92, 253.
Postglacial Beds, 6, 9–13, 15, 18, 21, 22, 25, 27, 29, 31, 34, 35, 42, 43, 45, 55, 62, 63, 69, 75, 94, 107, 110, 118, 154, 156, 159, 180, 279, 284, 285, 289, 291, 292, 303, 307, 362, 366, 367, 369, 403.
Post-Pliocene, 4, 5, 21, 131, 279, 410.
Post-Tertiary, 9, 15, 407.
Potash, 51.
Potier, A., 46, 92, 395.
Potton, 39.
Potwar Series, 142.
Poulton, 11.
Powell, Major J. W., 128.
Pozzy, M., 378.
Prague, 413.
Pratt, Dr., 363.
Precious Stones, 233, 238.
Preglacial Man, 377.
Preston, 22.
Prestwich, Prof. J., 34, 186, 378.
Prétrement, C. A., 289.
Přibram, 47, 197, 231, 245.
Price, F. G. H., 35.
Primary Rocks, 55.
Prime, F., Jun., 128.
Primordial, 119, 123.
Priodontognathus, 292.
Probst, 186.
Procoptodon, 289.
Prorastomus, 289.
Protogine, 396.
Protriton, 295.
Provis, J., 202.
Prussia, 48, 53, 68, 89, 261, 365, 366, 373, 387, 390, 398.
Psammites, 337.
Psaronius, 340.
Pseudomorphism, 209, 237, 238, 251, 254, 394.
Pteraspis, 278.
Pterocera, 315.
Pterodactylian Teeth, 282.
Pterygotus, 308.
Puertollano, 93.
Pumpelly, Prof. R., 253.
Punjab, 142.
Purbeck Beds, 292.
Purnell, C. W., 159.
Pycnodus, 278.
Pyrenees, 78, 84, 104.
Pyrites, 236, 249.
Pyrology, 255.
Pyrosclerite, 247.
Pyrosmalite, 250.
Pyroxene, 238.
Pyrrhotite, 260.

Quartz, 241, 246, 254, 257, 260.
—— Reefs, 158, 162.
Quartziferous Porphyry, 220.
Quartzite, 385.
Quartzose Grit, Perforation of, 377.
Quaternary, 34, 62, 63, 94, 95, 101, 273, 285, 290, 369, 372, 385, 389, 396, 408.
Queensland, 147, 152, 155, 158, 358, 389.
Quenstedt, Prof. F., 321.
Quercy, 279.
Quérigut, 389.
Quin, L. C., 92.
Quiroga y Rodriguez, F., 219.

Radimsky, V., 92.
Radstock, 2, 38, 39.
Raewski, M., 2, 38, 39.
Ráigarh, 134.
Rainfall, 199.
Rajmahal Beds, 136, 336, 386.
—— Hills, 375.
Rakonitz, 107, 307.
Ramiro, D. M. M., 263.
Rammelsberg, C. F., 254.
Ramsay, Prof. A. C., 92, 111, 395, 400.
Rancié, 105.
Rath, Prof. G. vom, 92, 219, 227, 241, 254, 255, 395, 410.
Rathbun, R., 310, 321.
Ratisbon, 47.
Raymond, Dr. W. R., 128, 146, 373.
Reade, T. M., 35, 186.
Reading Beds, 24.
Readwin, T. A., 202, 255.
Recent Deposits, 3, 6, 8, 10–13, 16–18, 21, 23, 27, 40, 41, 43, 45, 47, 55, 62–64, 81, 82, 85, 89, 92, 102, 107, 110, 113, 127, 135–137, 141, 148, 154, 278, 335, 358, 359, 362–368, 370, 371, 389, 394, 398, 400, 408.
Receptaculites, 308.
Reclus, E., 378, 410.
Red Chalk, 190, 208.
—— Clay, 190, 208.
—— Rocks, 26, 27.
Reich, H., 92.
Reichardt, D. E., 269.
Reindeer, 280.
—— Epoch, 392, 408.
Reinhardt, J., 289.
Reise-Skizzen, 101.
Reiss, W., 129.
Religion and Geology, 374.
Reliquiæ Aquitanicæ, 376.
Renard, Prof. A., 219.
Renaud, G. P. A., 168.
Renault, B., 331.
Renevier, Prof. E., 70, 99, 369, 374, 378.
Renfrewshire, 366.
Rensselaer Co., 119.
Reptiles, 272, 276, 288, 291.
Resal, H., 93.
Resin, 234, 258.
Retipora, 306.
Réunion, 386.
Reusch, H. H., 53, 93, 187.
Revest Mine, 413.
Revinian, 408.
Reydellet, De, 93, 255.
Rey-Lescure, 93.
Reynès, Dr. P., 255, 410.

Reynolds, Prof. J. E., 255.
Reyran, 414.
Rhætic Beds, 6, 10, 55, 108, 338.
Rheinfelden, 86.
Rhenish Devonians, 83.
—— Westphalia, 366.
Rhine Basin, 396.
Rhinoceros, 273, 278.
Rhizodus, 287.
Rhondda, 11.
Rhone, River, 51, 285, 408.
Riam-Kiwa, 168.
Richards, Prof. R. H., 395.
Richter, R., 94, 321.
——, Prof. T., 253.
Richthofen, Baron von, 141.
——, F. F., von, 378.
Ricketts, Dr. C., 187.
Riddlesdown, 13.
Rigg, Rev. A., 379.
Rink, Dr. H., 112.
Rio Grande do Sul, 121.
Rivers, 12, 54, 182, 188, 205, 270, 383, 405, 406.
Rivers Commission, 200.
River Terraces, 9.
Rivière, A., 192, 220.
——, E., 94, 290.
Roberts, J., 35.
——, W. C., 178.
Robertson, D., 9.
——, R. S., 379.
Robinson, W., 205.
Robson, H. R., 395.
——, Dr. J. S., 35.
Rocco, G. B., 94.
Rock-masses, 406.
—— salt, 51, 52, 243, 259.
—— striations, 43.
—— tar, 399.
—— work, 185.
Rocks, Analyses of, 414.
——, Clastic, 206.
——, Cornish, 34.
——, Disintegration of, 184.
——, Expansion of, 177.
——, Formation of, 192.
——, Nomenclature, of, 206.
——, Thermal Conductivity of, 195.
Rocky Mountain House, 412.
Rocky Mountains, 118, 122, 126, 276, 316, 384.
Rocroy, 408.
Rodriguez, 165, 281, 287, 317.
Roemer, Prof. F., 94, 290, 411.
Roessler, Dr. A. R., 364.
Rogers, J. J., 187.
——, Prof. W. B., 129.
Rohri, 135.
Roman Campagna, 81.
—— Wall, 24.
Ronco, 106.
Ronda Mountains, 216.
Roper, F. C. S., 36.
Rosanna, 103.
Roscoe, Prof. H. E., 111.
Rose, H. J., 95.
Roselite, 258.
Rosenbusch, H., 95, 220.
Ross, O. C. D., 202.
——, W. A., 255.
Ross, 397.
Rossberg, 49.
Rossendale, 26.
Rossi, M. S., 255.
Roth, J., 178.
Rothe, Prof., 290.
Rothesay, 14.
Rothliegende, 77.
Rothwell, R. P., 129, 379.
Rotomahana, 158.
Roudaire, Capt., 379.
Roumania, 52.
Rousselet, L., 141.
Rousset, A., 411.
Routledge, W., 395.
Rouville, Prof. P. de, 95.
Rowley Rag, 2.
Royer, C., 95.
Rudler, F. W., 220, 255, 262.
Rudnew, 396.
Rudofts Pit, 101.
Rugby, 18, 32, 44.
Rügen, 57.
Rugosa, 303.
Rumpf, J., 256.
Ruolz, de, 379.
Russell, R., 36, 360, 370.
Russia, 47, 48, 62, 63, 74, 76, 80, 96, 103, 107, 142, 197, 198, 200, 214, 220, 222, 224, 236, 238, 247, 254, 263, 269, 273, 312, 327, 364, 386, 389–393, 396, 397, 401, 402, 405–407, 409, 410, 412–414.
Rütimeyer, Prof. L., 96, 290, 291.
Rutlandshire, 25.
Rutley, F., 256.
Rutot, A., 95, 96, 220, 291, 406.

Saar Basin, 220.
Saarbrück, 281, 308.
Saarbrücken, 203.
Sabine, Sir E., 111.
Sacher, E., 220.
Sadebeck, Dr. A., 256.
Sadtler, S. P., 242.
Saghalien, 391, 406.
Sagot, Prof., 411.
Sahara, 145, 195, 395, 410.
St. Acheul, 372.
St. Béat, 65.
St. Cassian, 84.
Sainte-Claire-Deville, C., 379.
St. Cloud, 96.
Sainte-Croix, 326.
Saise, W., 8.
St. David's, 18, 311.
St. Domingo, 242, 263, 307.
Sainter, J. D., 36.
Saint-Etienne, 339.
Saint-Germain-sur-Ille, 327.
St. Gothard, 48, 55, 199, 373.
St. Helena, 167.
St. Hilary, 8.
St. Ives Consols Mine, 14.
St. John, O., 292.
St. John Del Rey, 125.
St. John's River, 381.
St. Louis Co., 384.
St. Mary's Cray, 41.
St. Meunier, 378.
Saint Paul, 168.
St. Petersburg, 197.
St.-Remy-Chausée, 388.
St. Vincent, 173.
Sakhar, 135.
Salair Chain, 140.
Salenia, 301.
Salis, F. von, 396.
Salite, 245.
Salmon Rivers, 31.
Salts (various), 44, 48, 51–53, 55, 57, 60, 77,

79, 87, 97, 105, 114, 116, 136, 142, 146, 163, 197, 198, 211, 232, 233, 243, 263, 268.
Salt-pans, 383.
Salter, J. W., 112.
Salvetat, 96.
Salwey, T. J., 396.
Salzburg, 108.
Samarskite, 261, 263.
Samoa, 166.
Samothrace, 218.
Samuelson, N., 396.
Sand, 207, 210, 406.
—— Dunes, 123, 188, 199.
Sandberg, C. P., 202.
Sandberger, Prof. C. L. F., 321, 379.
——, Prof. F., 96, 256, 257.
Sanders, W., 358.
Sandhurst, 158.
Sandstone, Columnar, 14.
Sandwich Islands, 165, 223.
San Juan, 119.
Sankoty Head, 131.
San Luis, 123.
San Pedro, 404.
Santa Fé Marls, 276, 277.
Santander, 278.
Santiago, 105.
Santon Oolites, 9.
Santorin, 211, 240.
Sapphire, 156.
Saporta, Count G. de, 62, 339, 379.
Saratov, 401.
Sargeaunt, Capt. R. A., 196.
Sardinia, 81, 201, 251.
Sarmatian, 72, 103.
Sarrouilhes, 65.
Sarsden or Sarsen) Stones, 24, 37.
Sarthe, 405.
Saskatchewan, 117.
Saumur, 403.
Saurian Remains, 271, 283, 411.
Sauvage, E., 129.
——, Dr. H. E., 291, 411.
Savoy, 80.
Sawkins, J. G., 115.
Saxony, 66, 71, 208, 241, 265, 308, 337.
Sazava, 406.
Scacchi, 257.
Scandinavia, 212.
Scania, 69, 78, 209, 313, 338.
Scaphaspis, 278.
Scapolite, 391.
Scatchel Head, 124.
Scenery, 45, 174.
Schaffhausen, 291.
Schantz, 96.
Scharff, Dr. F., 257.
Schatzlar Beds, 101.
Scheerer, Dr. T 258.
Schenk, Dr. A., 339, 340.
Scheurer-Kestner, M. A., 220.
Schimper, Dr., 146.
Schlœsing, T., 220.
Schlehan, A., 96.
Schlier, 72.
Schmidt, A., 396.
——, Prof. C., 396, 412.
——, F., 96, 412.
——, Dr. J. F. J., 178.
——, J. J. F. W. v. d. W. v., 415.
——, Prof. K., 269.
Schnapper Point, 306.
Schneeberg, 241.
Scholz, M., 97.
Schondorff, Dr. A., 202, 220.
Schott, C. A., 178.
Schrauf, Prof. A., 258.
Schröckinger, J. F. von, 258.
Schröder, Dr. H., 258.
Schubert, 97.
Schweitzer, Prof. P., 221.
Scindia, 139.
Scotland, 1, 9, 12, 14, 15, 20, 21, 23-25, 30, 31, 37, 45, 174, 184, 194, 204, 233, 241, 278, 296, 305, 306, 311, 323, 329, 330, 338, 359, 364, 366-368, 389, 404, 408, 413.
Scott, R. H., 112.
Scrope, G. P., 178.
Scudder, S. H., 131, 322, 323.
Sea Banks, 184.
—— Coasts, 170.
——, Deep, Life in the, 190, 191.
—— Level, 194, 196.
Sea water, 236.
—— Waves, 187.
Sedimentary Formations, 409.
Sediments, 411.
Seeley, Prof. H. G., 292.
Segré, 415.
Segregation, 191.
Seguenza, Prof. G., 97, 98, 323.
Seidlitz, Dr. C. v., 412.
Seine-et-Marne, 58.
——-et-Oise, 96.
Selheim, P. H., 147.
Seligmann, G., 258.
Sellafield, 270.
Selwyn, A. R. C., 129, 412.
Semmering, 262.
Semtsche, 80.
Senft, Dr. F., 258.
Serpentine, 52, 216, 223, 232, 237, 253, 254, 401.
Servia, 92.
Settle, 39.
Seurre, 206.
Seville, 94.
Sexe, S. A., 98, 187.
Shafts, 117.
Shag Point, 152.
Shaler, Prof. N. S., 130, 170, 178, 187, 188.
Shap Boulders, 43.
Shápur Coal-field, 139.
Sharks, 273, 291, 406.
Sharp, S., 379.
Sheffield, 37, 396.
Shell Mounds, 381.
Shepard, 390.
Sheppey, 2.
Sherborne, 2.
Sherwood Forest, 41.
Shoreham, 41.
Shotts, 12.
Shroeckinger, J. F. v., 97.
Shwe-Gyeen, 137.
Siberia, 140, 141, 246, 401.
Sicily, 77, 98, 291.
Sierra Nevada, 124.
Siewert, Dr. C., 412.
Sigillaria, 339.
Silesia, 96, 247, 252, 260, 337, 411, 415.
Silica, 245.
Silicified Wood, 126.
Silkstone, 15.

Silt-bed, 229.
Silurian, 57, 65, 89, 90, 105, 108, 110, 112, 127, 151, 175, 224, 251, 330, 331, 358, 369, 376, 389, 404, 405, 412, 413.
—— Upper, 8, 20, 29, 38, 46, 79, 94, 96, 118, 142, 148, 154, 156, 159, 308, 316, 318–321, 328, 362, 367, 401, 407.
—— Lower, 1, 7, 10–12, 18–20, 24, 31, 34, 41, 46, 78, 79, 107, 115, 118, 120, 123, 125, 126, 148, 154, 158, 159, 179, 211, 213, 219, 223, 263, 300, 303, 311–313, 315, 318, 319, 327, 328, 359, 362–364, 366, 367, 409.
Silver, 47, 81, 94, 97, 115, 119–121, 156, 197, 199, 202, 230, 242, 246, 251, 252, 264, 369, 398, 413.
Silver, S. W., 146.
Silvestri, Prof. O., 179, 258.
Silvretta, 76.
Simbirsk, 401.
Simmons, W., 36.
Simonin, L., 130.
Simpson, J. B., 396.
Sinai, 140.
Sipöcz, L., 258.
Sirenia, 288, 295.
Sirodot, 293.
Sismonda, 259.
Sjögren, A., 203, 259.
Skae, H. M., 366.
Skalkovski, C., 396.
Skene, A. J., 412.
Skey, W., 221.
Skiddaw Slates, 319.
Skye, I. of, 31.
Slaney, River, 27, 410.
Slates, 324.
Slaty Cleavage, 174, 175.
Slavonia, 89, 317.
Slickensides, 43, 175, 179.
Smith, Dr. E. A. 130.
——, Prof. J. L., 227, 228, 259.
Smock, Prof. J. C., 130, 203.
Smyth, R. B., 151, 159, 358, 412.
Smyth, W. W., 37, 203, 259.
Snake River, 367.
Snelus, G. J., 221.
Snioland, 107.
Sodium, Nitrate of, 250.
Sohncke, L., 259.
Soil, 411.
Solanocrinus, 316.
Solutré, 60.
Somersetshire, 41, 45, 201, 394.
Somma Bay, 210.
Somme, 88, 201.
Sorby, H. C., 37.
Sotzka, 311.
Southall, J. C., 380.
South Park, 276.
South Seas, 165.
Spa, 267.
Spain, 20, 52, 54, 56, 68, 81, 82, 86, 92–95, 105, 106, 216, 218, 219, 230, 252, 255, 263, 278, 315, 383, 408.
Spatangidæ, 329.
Species, Origin of, 320.
Spencer, J. W., 396.
Sperenberg, 48, 177.
Spezia, G., 396.
Sphærodus, 281, 284.
Sphærolites, 231.
Sphæroma, 297.
Sphenopteris, 101.
Spiennes, 56.
Spiess, F., 412.
Spitzbergen, 324.
Spon, E., 203.
Sponges, 297, 306, 403.
Spring, W., 259.
Springs, 205, 406.
——, Mineral, 267, 399.
——, Thermal, 48, 158, 235, 236, 268, 358.
Spurr Mountain Iron Mine, 253.
Squire, L., Jun., 260.
Ssuna, 80.
Stabbarps, 209.
Stache, Dr. G., 98, 99, 146.
Staffordshire, 2, 11, 21, 26, 295.
Stagonolepis, 282.
Stanley, Dr. A. P., 380.
Stansfield, 26.
Stapf, 99.
Stark, F., 196.
Stassfurt, 52, 233.
Stawell, 147.
Steenstrup, K. J. T., 111.
Stefani, C. de, 99, 100, 323.
Steiermark, 282.
Stein, 65.
Steinheim, 96, 390.
Stelzner, A., 260.
Stevens, J., 37.
Stevenson, F. J., 398.
——, Prof. J. J., 131.
——, W., 37.
Stewart, S. A., 192.
Sthenurus, 289.
Stilbite, 260.
Stirlingshire, 367.
Stoddart, W. W., 38, 46, 293.
Stoehr, E.. 100.
Stolberg, 68.
Stoliczka, F., 141.
Stolpe, M., 369.
Stone, 404.
Stone Mountain, 122.
Stones, Ornamental, 204.
Stoney, G. J., 213.
Stoppani, A., 323, 412.
Strachey, Lieut.-Gen. R., 380.
Strangways, C. F., 360, 361, 370.
Straparolus, 307.
Strata, Table of, 374.
Stratification, 406.
Streng, A., 221, 260.
Striations, 43.
Strobel, P., 131, 293.
Stromboli, 177.
Struckmann, A. C., 100, 412.
Struve, H., 396.
Struver, G., 260.
Strüver, J., 100.
Stuart, Dr. C., 413.
Studdert, L., 269.
Studer, B., 100, 222.
Stulz, 369.
Stur, D., 101, 340.
Styria, 90, 92, 230, 239.
Subapennine, 100.
Subathu Beds, 143.
Subcarboniferous, 124.
Submerged Forests, 13, 173.
Subsidence, 178.
Sub-Wealden boring, 2, 6, 32, 40, 44, 395.
Suderöe, 207.
Suess, Prof. E., 101.

Suir, River, 31.
Sulina, 183.
Sulphur Deposits, 48, 54, 63, 77, 100, 142, 231, 398, 399, 402, 405, 408.
—— Well, 267.
Sulz, 392.
Sumatra, 168, 299.
Sumner, 152.
Superior, Lake, 122, 253, 393.
Surat, 135.
Surface Geology, 392.
Surrey Docks, 3,
Surveys, 54, 370, 376, 381.
Sutherland, A., 38.
——, Dr. P. C., 112.
Swabia, 84.
Swallow, E. H., 261, 269.
Swanage, 292.
Swanston, W., 397.
Sweden, 20, 57, 62, 68, 69, 73, 78, 79, 87, 90, 102, 103, 198, 201, 202, 209, 217, 222, 229, 230, 243, 249, 250, 259, 313, 338, 369, 377, 389.
Switzerland, 47–49, 53, 55, 62, 63, 74, 86, 92, 96, 99, 100, 103, 104, 199, 205, 206, 211, 222, 246, 247, 271, 290, 291, 313, 314, 316, 338, 369, 389, 391, 397, 398, 413.
Sydney, 158, 395.
Symonds, Rev. W. S., 397.
Syracuse, 65.
Syzran, 327.
Szabó, Prof. J., 222, 261.
Szászka, 222.
Sz'tshwan, 141.

Table Cape, 328.
Talbot, H. T., 38.
Talc, 251.
Talclúr Series, 134, 136.
Tamboosk, 401.
Tanganyika, Lake, 145.
Tangiers, 144.
Tanner, Dr. J. A., 261.
Tarapaca, 255.
Tardy, A., 101, 102.
Tarn-et-Garonne, 93.
Tartary, 134, 177.
Tasmania, 147, 148, 163, 218, 242, 304, 358, 390.
Tate, Prof. R., 38, 46, 323, 328.
Taunusian, 278.
Taviglianaz Grit, 103.
Tavistock, 206.
Tawney, E. B., 2, 38, 39, 46.
Tayler, J. W., 111.
Taylor, J. E., 380.
——, N., 160.
Tea Soils, 137, 207.
Teall, J. J. H., 39.
Tecali, 401.
Tech Valley, 104.
Teclu, 110.
Telluric Minerals, 239.
Tellurium, 405.
Temperature, 171, 175, 177–179.
Tenasserim, 137.
Tenby, 2.
Tengri Núr Lake, 140.
Tennant, Prof, J., 261.
Tennessee, 114.
Tenow, S., 369.
Téofilactoff, 364.
Tequezquite, 263.
Terebratula, 315.
Terminology, 264.
Terquem, O., 413.
Terra Rossa, 65, 86. 323.
Terraces, 9, 183.
Terreil, A., 261.
Tertiaries, 51, 54, 60, 65, 87, 90, 103, 105, 115, 117, 144, 159, 272, 276, 285, 286, 291, 298, 300, 302, 304–306, 311, 313–315, 323–325, 328, 334, 335, 358, 366, 367, 369, 387, 390, 392, 398, 401, 403, 408, 409, 412.
Teruel, 106.
Tessin, 211.
Tetrahedrite, 235.
Thalassotheria, 280.
Thalén, R., 198, 413.
Thallium, 261.
Thanet, I. of, 21.
Thayingen, 291.
Thenius, 102.
Theobald, 513.
Thermal Conductivity, 195.
—— Springs, 48, 158, 235, 236, 268, 358.
Theux, 58, 85.
Thibet, 140, 141.
Thiede, 287.
Thiollier, A., 413.
Thomas, J. W., 261.
Thompsonite, 239, 245.
Thomson, J., 323.
——, Sir Wm., 179.
——, Sir Wyville, 168, 380.
Throndhjem, 300.
Thun, Lake of, 397.
Thuringia, 71, 244, 321, 412.
Thuringian Slates, 94.
Tibet, 140.
Tichborne, C. R. C., 261, 226.
Tidal Erosion, 187.
Tiddeman, R. H., 22, 39, 364.
Tietze, Dr. E., 142, 269.
Tilburstow, 29.
Till, 23.
Tilly-Foster Iron Mine, 235.
Tilsit, 387.
Timbal-Laygrave, E., 102.
Time, Geological, 184, 194, 302.
Tin Ore, 36, 82, 111, 147, 148, 156, 158, 159, 163, 200, 201, 230, 242.
Tin-stream, 8.
Tisoa, 307.
Tissandier, G., 380.
Titaniferous Iron Sand, 237.
Titanium, 229.
—— iron, 391.
Tlemcen, 373.
Todmorden, 22.
Tombeck, 102.
Tongrian, 53, 326, 386.
Topley, W., 43, 44, 188, 203, 362, 365.
Torbanite, 221.
Törnebohm, A. E., 102, 103, 222.
Torpa, 87.
Torquay, 378.
Torrell, 335.
Torriglia, 335.
Tortoises, 281, 282.
Toucas, A., 70, 310.
Touchstone, 239.
Toula, Dr. F., 103, 112, 324, 413, 414.
Toungoo, 137.
Tourcoing, 385.
Tourmaline, 265.

Tournai, 61.
Tournouer, R., 324, 325.
Toussaint, 385.
Trachyte, 209, 222, 229, 248.
Traill, W. A., 40, 41.
Transition Beds, 117.
Trans-Orange Republic, 146.
Transylvania, 84, 87, 104, 273, 410.
Traps, 211, 243.
Traquair, Dr. R. H., 294.
Trautschold, H., 103, 142, 326, 397.
Travers, W. P. L., 162.
Travertine, 40.
Tree-roots, Perforation by, 377.
Trentham, 30.
Trentinaglia-Telvenburg, J. R. von, 103, 397.
Trevelyan, Sir W. C., 203.
Treves, 269.
Triarthus, 303.
rias, 1, 2, 7, 9, 11, 17, 18, 21-24, 29, 30, 32, 36, 38, 41, 46, 48, 51-53, 55, 57, 58, 64, 72, 73, 79, 81, 84-86, 90, 91, 99, 108, 110, 113, 117, 120, 125, 127, 128, 131, 134, 136-138, 141, 148, 154, 175, 192, 209-212, 283, 301, 313, 321, 335, 358, 361-367, 369, 370, 391, 393, 394.
Tribolet, F. de, 103, 104, 326, 397.
Trickett, S., 204.
Tridymite, 231.
Trigonia, 314.
Trilobites, 299, 310, 313, 321.
Triplite, 246.
Trisanna, 103.
Tristichopterus, 294.
Trochidæ, 297.
Troïlite, 259.
Tromelin, G. de, 327, 405.
Trondhjem, 75.
Trousset, 408.
Trutat, A., 104.
——, E., 104.
Tschaptschatschi Hills, 401.
Tschermak, Prof. G., 196, 222, 227, 228, 262.
Tubbing, 7.
Tufa, Calcareous, 40.
Tuffs, 62.
Tunnels, Natural, 90.
Tuomey, Prof. 263.
Turkey-in-Europe, 48, 52, 183, 218, 269.
Turonian, 50.
Turrialba, 216.
Tuscany, 99, 279, 281, 284, 372.
Twechar, 359.
Tweed, River, 21.
Tylden-Wright, C., 41.
Tylor, A., 188.
Tynedale, 198.
Tyrol, 59, 72, 73, 84, 85, 91, 92, 103, 108, 184, 209, 210, 212, 218, 239, 321, 389, 397, 410.
Tyrone, 2, 17, 27.

Ubachs, C., 294.
Uchaux, 70, 310.
Uj-Moldova, 222.
Uleaborg, 74.
Ullswater, 393.
Ulrich, G. H. F., 154, 162, 163, 262.
Ultima Thule, 54.
Underground Forces, 177.
—— Temperature, 177, 178, 179.
Undulations of Chalk, 3.
Ungulata, 276.
Uniformity, 172.
Unio, 326.
United States, 113-133, 170, 171, 178, 180-182, 187, 188, 192, 200, 203, 211-213, 219, 221, 226-228, 230, 232-235, 237, 239, 241-243, 245, 249, 251, 253, 261, 263, 267-269, 271, 272, 274-277, 282, 284-287, 292, 296, 301-303, 308, 312, 316, 318, 319, 323, 328, 330, 331, 364, 367, 369, 379, 381, 384, 385, 388 391, 393, 396-398, 400-403, 405-409, 412.
Unst, I. of, 30.
Untersulzbach, 262.
Upheaval, 66.
Upware, 314.
Urals, 142, 236, 238, 389, 391, 393, 397, 407, 413.
Uranium, 115.
Ure, 262.
Urgonian, 326.
Ursendorf, 84.
Ursus, 282.
Uruguay, 241.
Usses, 51.
Ussher, W. A. E., 41, 359.
Utah, 125, 132.
Utrecht, 389.

Vacek, M., 104, 294.
Vadot, N., 104.
Vaillant, Prof. L., 294.
Vala, J., 413.
Valais, 269.
Valenciennes, 65, 67, 87.
Valleys, 11, 174, 183.
Vanadium, 212, 243, 267.
Vancouver Island, 120, 129.
Vanden-Broeck, E., 104, 105.
Van Hilt, 200.
Var, 58.
Variolite, 224.
Vasseur, G., 295.
Vassy, 291.
Vatican-zone, 81.
Vaudoise Jura, 326.
Veins, 53, 218, 416.
Veglia, 403.
Vélain, C., 168, 262.
Venda, 101.
Vennor, H. G., 262.
Verbeek, R. D. M., 168.
Verespatak, 253, 262.
Vermiculites, 234.
Veronese, 378.
Verril, Prof. A. E., 131.
Vertebrata, 271, 403.
Vesuvian Lava, 245.
—— Mica, 244.
Vesuvius, 172, 213.
Vicentine, 298.
Victoria, 147, 148, 153, 158-164, 230, 254, 262, 304-306, 314, 328, 358.
Victoria Cave, 39.
Vicuna, G., 105.
Vidal, Dr. A., 169.
——, L. M., 105.
Viedenz, 105.
Vieillard, E., 105.
——, E. F., 105.
Vieira, 105.
Vienna, 64.
—— Basin, 282.
—— Exhibition, 205.

Vienna Sandstone, 330.
Vigeois, 358.
Vignaes, 386.
Vigunsca, 63.
Vilanova y Piera, J., 105, 295.
Villada, M. M., 263.
Villnös, 72.
Villot, 106, 414.
Vincent, G., 106.
——, W. T., 41.
Vindhyan Group, 139.
Virginia, 113, 119, 131, 132, 264, 385, 400.
Virgulian, 397.
Virlet d'Aoust, 196.
Vischniakoff, N., 327.
Visiani, R. de, 340.
Vivenot, Dr. F. von, 205.
Voelcker, Prof. A., 263, 269.
Vogel, Sir J., 153.
Vogelsang, 369.
Vohl, H., 269.
Volcanic Phenomena, 10, 59, 75, 106, 170, 172, 173, 175, 178, 179, 216, 223, 224, 258, 369, 384, 398, 416.
Volcanoes, 55, 100, 101, 121, 165, 171, 173, 179.
Volhard, 269.
Volterrano, 284.
Vom Bath, 254.
Vorhauserite, 239.
Vosges, 68, 78, 223, 388.
Vrba, Dr. K., 112.
Vugh, 14.
Vulcanicity, 172, 178, 179, 196, 228.
Vulcano, 207.

Waagen, Dr. W., 327.
Wadsley, 37.
Wahl, O. W., 414.
Waldenburg, 101.
Waldheim, 216.
Wales, 2, 4, 7, 9, 11, 18–20, 28, 58, 179, 198, 200, 202, 204, 223, 261, 263, 268, 311, 323, 359, 360, 383.
Walker, H., 41.
——, J. F., 314.
Wallerawang, 156.
Wanganui, 159.
Wanklyn, J. A., 270, 414.
Wantage, 10.
Wapplerite, 258.
Warburton, Col. P. E., 163.
Ward, J., 295.
——, J. C., 10, 22, 42, 43, 179, 223, 360, 370.
——, Dr. O., 43, 179, 380.
Warden, C. J. H., 223.
Wardle, T., 193.
Warner, F. T., 340.
Warring, C. B., 380.
Warth, H., 143.
Washington, Mt., 122.
Water Analysis, 414.
Waterfalls, 11.
Water Supply, 45, 93, 142, 158, 198-200, 202, 203, 205.
Water-Lime Group, 308.
Waters, A. M., 106, 340.
Watford, 2.
Watson, W. H., 270.
Watts, W. L., 106, 107.
Wavellite, 234.
Waverly Group, 331.
Wax, Mineral, 204.
Weald, 15.
Wealden Beds, 44, 292, 339.
Webster, Prof. N. B., 132.
Weddel, 381.
Weigrand, B., 223.
Weiprecht, C., 111.
Weisbach, Dr., 241, 263.
Weiss, 365.
Weissig, 66, 308.
Well-borings, 16, 18, 21, 31, 64, 92, 102, 145, 203, 384-386, 402.
Well Hill, 41.
Wellington, W., 163.
—— (New Zealand), 149.
Wells, Mr., 41.
Wenneberg, 211.
Wermland, 250.
West Indies, 263, 307, 309.
Westmoreland, 42.
Westphalia, 366.
Wethered, E., 8.
Wexford, 27.
Weymouth, 13, 34.
Whale Lode, 390.
Whales, 272, 273, 278, 293.
Wheal, Mary Ann, 14.
Wheeler, Prof. C. G., 381.
——, G. M., 132.
Wheeler's Expedition, 117, 124.
Whidley Island, 124.
Whitaker, W., 43, 381, 394.
White, R., 41.
Whitehaven, 39, 270.
Whitfield, R. P., 125, 330.
Whitley, N., 43.
Whitney, J. D., 381.
Whittlesey, Col. C., 397.
Wichmann, Dr. A., 169, 223.
Wicken, 39.
Wide Bay, 152, 389.
Wieleczka, 198.
Wieser District, 92.
Wight, Isle of, 3, 292.
Wiik, T. J., 107, 224, 263.
Wilder, Prof. B. G., 295.
Wilischthal, 214.
Wilkinson, C. S., 156, 157.
Willcox, J., 293.
Willett, H., 44.
Williams, C. P., 264
Williamson, Prof. W. C., 179, 340.
Willis, J., 179.
Willson, W. L., 363.
Wilmington, 390.
Wilson, Major C. W., 142.
——, J. M., 44, 295, 296.
Winchell, Prof. A., 132.
——, Prof. N. H., 125, 132.
Winchester, 16, 340.
Windakiewicz, E., 204.
Wind-drift Erosion, 182, 186.
Windy Knoll, 277.
Winkler, Dr. T. C., 414.
Winwood, Rev. H. H., 44.
Wisconsin, 113, 123.
Wöhler, F., 398.
Woldřich, Prof. J., 224.
——, Dr. J. N., 107.
Wolf, H., 107, 108.
——, Prof. T., 133.
Wolframite, 248.
Wollaston, G. H., 44, 193, 229.
Wollastonite, 240.
Wonfor, T. W., 296.
Wood, Silicified, 126.

Woods, Rev. J. E. T., 328.
Woodward, B. B., 378.
——, C. J., 179.
——, H., 112, 189, 296, 381, 403.
——, H. B., 45, 359, 361, 362, 381.
——, S. P., 328.
Wookey, 2.
Woolwich, 41.
—— Beds, 24.
World, 369.
Worth, R. N., 45, 204.
Worthen, A. H., 133, 292, 328.
Wrede, F., 414.
Wright, A. W., 228.
——, B. M., 24, 407.
——, J., 328, 329.
——, Dr. T., 329.
Wrigley, H. E., 124.
Wulfenite, 242.
Würtemberg, 60.
Wurtz, Dr. H., 264.
Wyken Colliery, 32.
Wylie, A., 363.
Wyman, J., 381.
Wynád, 137.
Wynne, A. B., 1, 142, 143.
Wyoming, 124, 132, 364.

Yale College, 131, 212, 243.
Yar Connaught, 215.
Yeddo, 169.
Yellowstone Region, 114, 124, 364, 367, 383.
Yesso, 168, 398, 399.
Yoredale Rocks, 28.
York Co., 120, 211.
Yorke's Peninsula, 153.
Yorkshire, 6, 14, 15, 22, 26, 31, 36, 370, 394.
Young, C. A., 264.
——, Prof. J., 329.
——, J., 45, 296, 329, 330.
——, R., 45.
Ypresian, 73.

Zaho, 140.
Zealand, 393.
Zepharovich, R. von, 264.
Zerrenner, C., 264, 265.
Zezi, P., 398.
Zickendrath, E., 224.
Zigno, Baron A. de, 296.
Zinc Ore, 54, 82, 94, 119, 120, 251, 391, 399.
Zincke, Rev. F. B., 398.
Zips, 79.
Zirkel, Dr. F., 224, 265.
Zirlite, 253.
Zittel, K., 108.
Zöblitz, 216.
Zoldo, 84.
Zones, 50.
Zonochlorite, 243.
Zschau, E., 265.
Zugmayer, H., 108, 330.
Zwickau, 377, 415.

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